UTILITY COMMITTEE

A G E N D A

February 26, 2007 - 5:00 P.M. - Council Chambers - City Hall - City of Dover

Public comments are welcomed on any item and will be permitted at appropriate times. When possible, please notify the City Clerk** (736-7008 or e-mail at Tmcdowell@dover.de.us) **should you wish to be recognized.

AGENDA ADDITIONS/DELETIONS

1. Annexation Request - West Side of Bay Road at the Intersection with Lafferty Lane, Owned by David K. Harer, Ryan W. Lloyd, and Island Farm, Inc. The Equitable Owner is Stillman Glade Associates

2. Overview of Energy and Capacity Markets and Impacts to Customers and Generating Station Value

3. PACE/NAES Monthly Report *(January)*

4. Update - Options to Address Regulation 1146 Emission Control Requirements at McKee Run 3 Electric Generation Station

5. Proposed Energy Conservation Plan for Dover *(Ron Zink, Sierra Club)*

6. Adjournment by 6:30 P.M.

/tm
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THE AGENDA ITEMS AS LISTED MAY NOT BE CONSIDERED IN SEQUENCE. THIS AGENDA IS SUBJECT TO CHANGE TO INCLUDE THE ADDITION OR THE DELETION OF ITEMS, INCLUDING EXECUTIVE SESSIONS.

Staff recommends the adoption of the following Resolution setting the date of the annexation Referendum to be held on **APRIL 12, 2007**, for property located **on the west side of Bay Road at the intersection with Lafferty Lane**.

A RESOLUTION PROPOSING THE INCLUSION OF AN AREA WITHIN THE LIMITS OF THE CITY OF DOVER AND CALLING FOR A SPECIAL ELECTION TO BE HELD IN THE SAID AREA.

WHEREAS, the Charter of the City of Dover authorizes Council to extend the boundaries of the said City after a special election of the qualified voters and real estate owners of the territory proposed to be annexed, and

WHEREAS, the Mayor and Council of the City of Dover deem it in the best interest of the City of Dover to include an area located on the west side of Bay Road at the intersection with Lafferty Lane, which is contiguous to the present City limits, into the limits of the City of Dover and within a zoning classification as recommended by the City of Dover Planning Commission.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE CITY OF DOVER, IN COUNCIL MET:

1. That a special election be held for an area located on the west side of Bay Road at the intersection with Lafferty Lane situated in East Dover Hundred, Kent County, State of Delaware.

2. That the election be held on the 12th day of April, 2007 commencing at the hours of 11:00 a.m. in the City Hall Annex, 15 E. Loockerman Street, Dover, Delaware, for the purpose of submitting the question of annexation of the above area to those persons entitled to vote thereon.

3. That the election be held and conducted pursuant to the provisions of the Charter of the City of Dover as amended.

4. That this resolution be published in accordance with the City of Dover Charter.

ADOPTED: *

S:\ClerksOffice\Annexations\Annex-2007\US 113 - W Side across from Lafferty Ln\CAF 02-26-07 - 1 US 113 Referendum Resolution.wpd

PETITION TO ANNEX AND ZONE PROPERTY

Before The City Council Utility Committee

February 26, 2007

Applicant:	Stillman Glade Associates, Inc. 30 The Green Dover, DE 19901
Owner:	David Harer 1106 Bay Road Dover, DE 19901 Ryan Lloyd 1080 South Bay Road Dover, DE 19901 The Island Farm 16793 Island Farm Lane Milton, DE 19968
Location:	US 113, Across from Lafferty Lane, South of Dover
Size:	+/-3.3 acres
Tax Parcel #:	ED-00-086.00-01-16.01-000, ED-00-086.00-01-04.00-000 and ED-00-086.00-01-03.00-000.
Application Date:	January 23, 2007
County Zoning:	BN (Neighborhood Business), RS-1 (Single Family Residence)
Proposed Zoning:	C-4 (Highway Commercial) AEOZ (Airport Environs Overlay Zone) – Noise Zone 'C'
Present Use:	Residential dwelling
Proposed Use:	Hotel and Restaurant
Comprehensive Plan Designation:	Category 2 – Lands Desirable for Annexation
Utility Availability:	The properties are currently receiving electricity from the City of Dover. City water service is available from the east side of US 113. The developer will be required to jack and bore state roadway for access to water. Sanitary sewer service if available is serviced by Kent County.
Cost-Rev Analysis:	The Cost-Revenue analysis showed a positive cash flow to the City of approximately $56,805 over ten years.

File Number: AX-07-02

NOTE: These properties are located within AEOZ Noise Zone ‘C’. The proposed use of a Hotel is **not a permitted use under Article 3 §22.6 of the *Zoning Ordinance.* The Cost-Revenue analysis is based upon data provided by the applicant and is calculated as if the property will be used in the manner of a Hotel.

Synopsis of Cost/Revenue Analysis Model for Annexation AX-07-02: Lands of Herer, Lloyd, and the Island Farm located at 1106 Bay Road (3.3 acre)

The following are notes regarding Cost/Revenue Analysis Model and the data inputs for the calculations.

Model Calculations

- The model was run using the 2006 budget. The applicants provided the development numbers.

Residential Costs

- None.

Residential Revenue

- None

Non-Residential Costs

- The Electric cost and revenue are suspected to be too high. The problem arises because of the percent usage by residential customers and not the percentage of population.
- Police operation costs are suspected to be high. The problem arises because the calculation of cost is based on the index of taxes and not the proportion of crimes that occur related to this type of residential property.
- The General Administrative costs are suspected to be too high. The problem arises because the calculated cost is based on the index of taxes.
- The projected planning and inspection costs are suspected to be too high for post development years 2-9. The problem arises on how the numbers are calculated by the model.
- The property currently has City of Dover Electric Service.

Non-Residential Revenue

- The Electric cost and revenue are suspected to be too high. The problem arises because of the percent usage by residential customers and not the percentage of population.
- The property currently has City of Dover Electric Service.
- The projected planning and inspection revenue is suspected to be too high for post development years 2-9. The problem arises on how the numbers are calculated by the model.

Model Development Plan

City of Dover Cost/Revenue Analysis **Module 0** **Budget Year: 2006**

Location: 1106 Bay Road

NON-RESIDENTIAL COSTS

Service	Type	Year 1 Development Year 1	Year 2 Post Dev. Year 1	Year 3 Post Dev. Year 2	Year 4 Post Dev. Year 3	Year 5 Post Dev. Year 4	Year 6 Post Dev. Year 5	Year 7 Post Dev. Year 6	Year 8 Post Dev. Year 7	Year 9 Post Dev. Year 8	Year 10 Post Dev. Year 9	Formula
Sewer & Water	Capital											
	Operating	$17,260	$17,260	$17,260	$17,260	$17,260	$17,260	$17,260	$17,260	$17,260	$17,260	
Sanitation	Capital											
	Operating	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Police	Capital											
	Operating	$23,678	$23,560	$23,560	$23,560	$23,560	$23,560	$23,560	$23,560	$23,560	$23,560	
Fire	Capital											
	Operating											
Planning & Inspections	Capital											
	Operating	$2,381	$2,381	$2,381	$2,381	$2,381	$2,381	$2,381	$2,381	$2,381	$2,381	
Streets	Capital											
	Operating	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Library	Capital											
	Operating	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Parks & Recreation	Capital											
	Operating	$0	$0	$0	$0	$0	$0	$0	$0	$0		
Electric	Capital	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
	Operating	$245,870	$245,870	$245,870	$245,870	$245,870	$245,870	$245,870	$245,870	$245,870	$245,870	
General Administrative	Capital											
	Operating	$8,481	$8,481	$8,481	$8,481	$8,481	$8,481	$8,481	$8,481	$8,481	$8,481	
TOTAL COSTS		$297,670	$297,553	$297,553	$297,553	$297,553	$297,553	$297,553	$297,553	$297,553	$297,553	

NON-RESIDENTIAL REVENUE

Revenue Source	Year 1 Development Year 1	Year 2 Post Dev. Year 1	Year 3 Post Dev. Year 2	Year 4 Post Dev. Year 3	Year 5 Post Dev. Year 4	Year 6 Post Dev. Year 5	Year 7 Post Dev. Year 6	Year 8 Post Dev. Year 7	Year 9 Post Dev. Year 8	Year 10 Post Dev. Year 9	Formula

Property Tax	$22,770	$22,770	$22,770	$22,770	$22,770	$22,770	$22,770	$22,770	$22,770	$22,770	
Transfer Tax	$12	$12	$0	$0	$0	$0	$0	$0	$0	$0	
Municipal Street Aid Fund	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Electric	$247,861	$247,861	$247,861	$247,861	$247,861	$247,861	$247,861	$247,861	$247,861	$247,861	
Sewer/Water	$22,689	$22,689	$22,689	$22,689	$22,689	$22,689	$22,689	$22,689	$22,689	$22,689	
Sanitation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Permits & Licenses	$21,600	$3,207	$3,207	$3,207	$3,207	$3,207	$3,207	$3,207	$3,207	$3,207	
Wastewater Impact Fee	$30,592	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Comcast Franchise	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Library	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Miscellaneous	$1,818	$1,818	$1,818	$1,818	$1,818	$1,818	$1,818	$1,818	$1,818	$1,818	
TOTAL REVENUE	$347,342	$298,356	$298,344	$298,344	$298,344	$298,344	$298,344	$298,344	$298,344	$298,344	

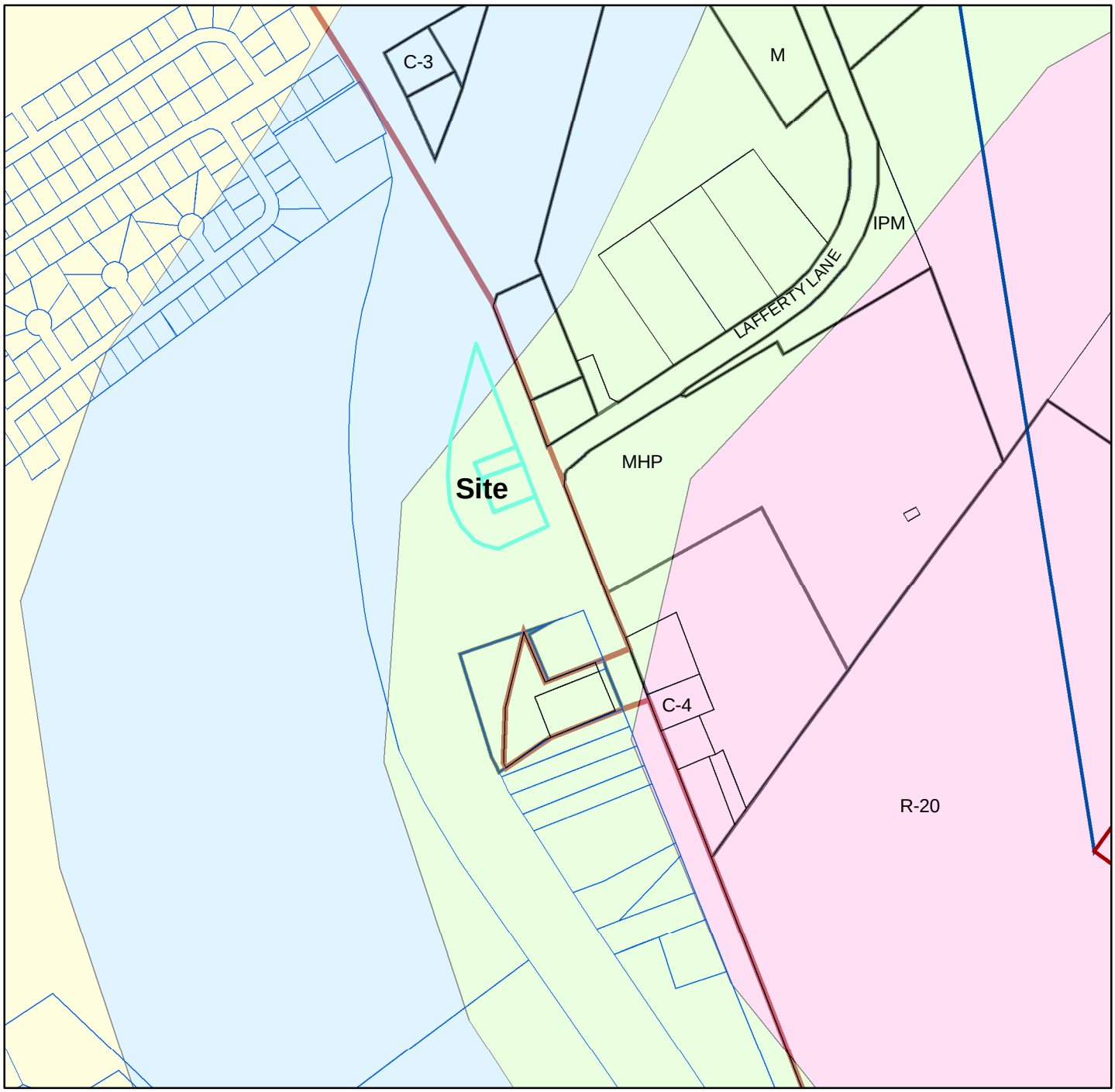
TOTAL NON-RESIDENTIAL IMPACT

	Year 1 Development Year 1	Year 2 Post Dev. Year 1	Year 3 Post Dev. Year 2	Year 4 Post Dev. Year 3	Year 5 Post Dev. Year 4	Year 6 Post Dev. Year 5	Year 7 Post Dev. Year 6	Year 8 Post Dev. Year 7	Year 9 Post Dev. Year 8	Year 10 Post Dev. Year 9	TOTAL
Total Costs	$297,670	$297,553	$297,553	$297,553	$297,553	$297,553	$297,553	$297,553	$297,553	$297,553	$2,975,647
Total Revenue	$347,342	$298,356	$298,344	$298,344	$298,344	$298,344	$298,344	$298,344	$298,344	$298,344	$3,032,451
Net Cost/Revenue Impact	$49,671	$803	$791	$791	$791	$791	$791	$791	$791	$791	$56,805

City of Dover

Department of Planning & Inspections

Application No.: AX-07-02



Legend

- Dover Parcels
- Dover Boundary
- Zoning

Plan Title: AX-07-02 Lands of Island Farm Inc., Harer, and Lloyd
Plan Type: Annexation
Tax Parcels: ED-00-086.00-01-16.01-000,
ED-00-086.00-01-04.00-000 and
ED-00-086.00-01-03.00-000
Site Area: 3.3 ac
Owner: David Harer, Ryan Lloyd, and The Island Farm
County Zoning: BN (Neighborhood Business) and RS-1 (Single Family Residential, AEOZ - Noise Zone 'C'
Proposed Zoning: C-4 (Highway Commercial) AEOZ - Noise Zone 'C'
Date: 2-22-07

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Washington New York Houston Columbia San Diego London Moscow Mexico City

Overview of Energy and Capacity Markets and Impacts to Customers and Generating Station Value

February 26, 2007

Agenda

- Energy and Capacity Markets
  - Congestion
- The Development of the Capacity Market in PJM
- Impact to Customers and Generating Station Valuation

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Energy and Capacity Markets

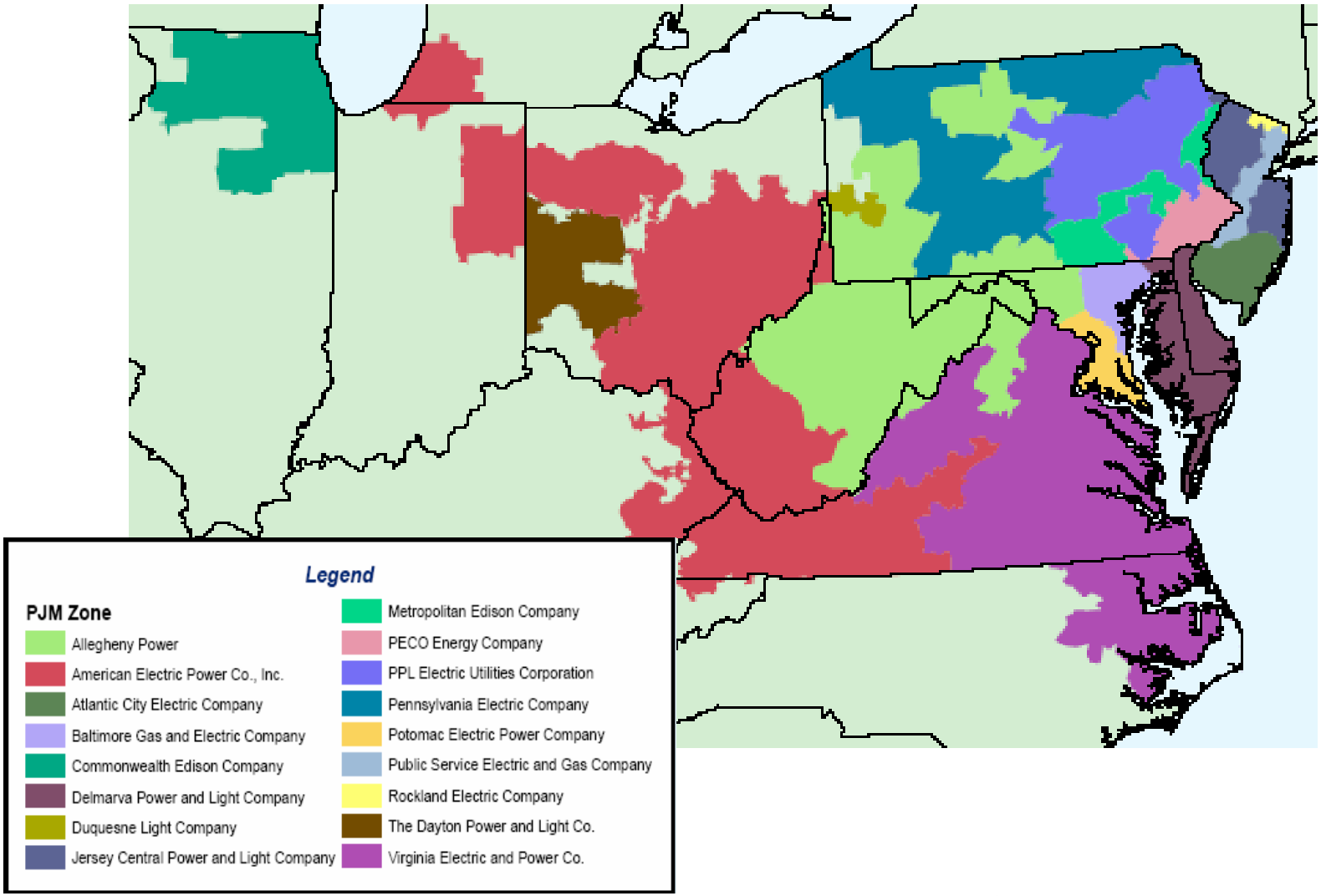
• Because Dover serves load (has customers) PJM requires Dover to provide for both energy and capacity. Energy is the actual power used in Dover and Capacity is a planning tool used to ensure sufficient electric resources are available to maintain the reliability of the electric grid

• Energy needs for Dover are met through purchases from investment grade sellers (utilities and energy brokers) and self supply from the generating assets during high price periods

• Dover meets its Capacity obligation through self supply (ownership of generating assets) and small purchases from the market (5,000 -10,000 kW)

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PJM Region



Source: PJM

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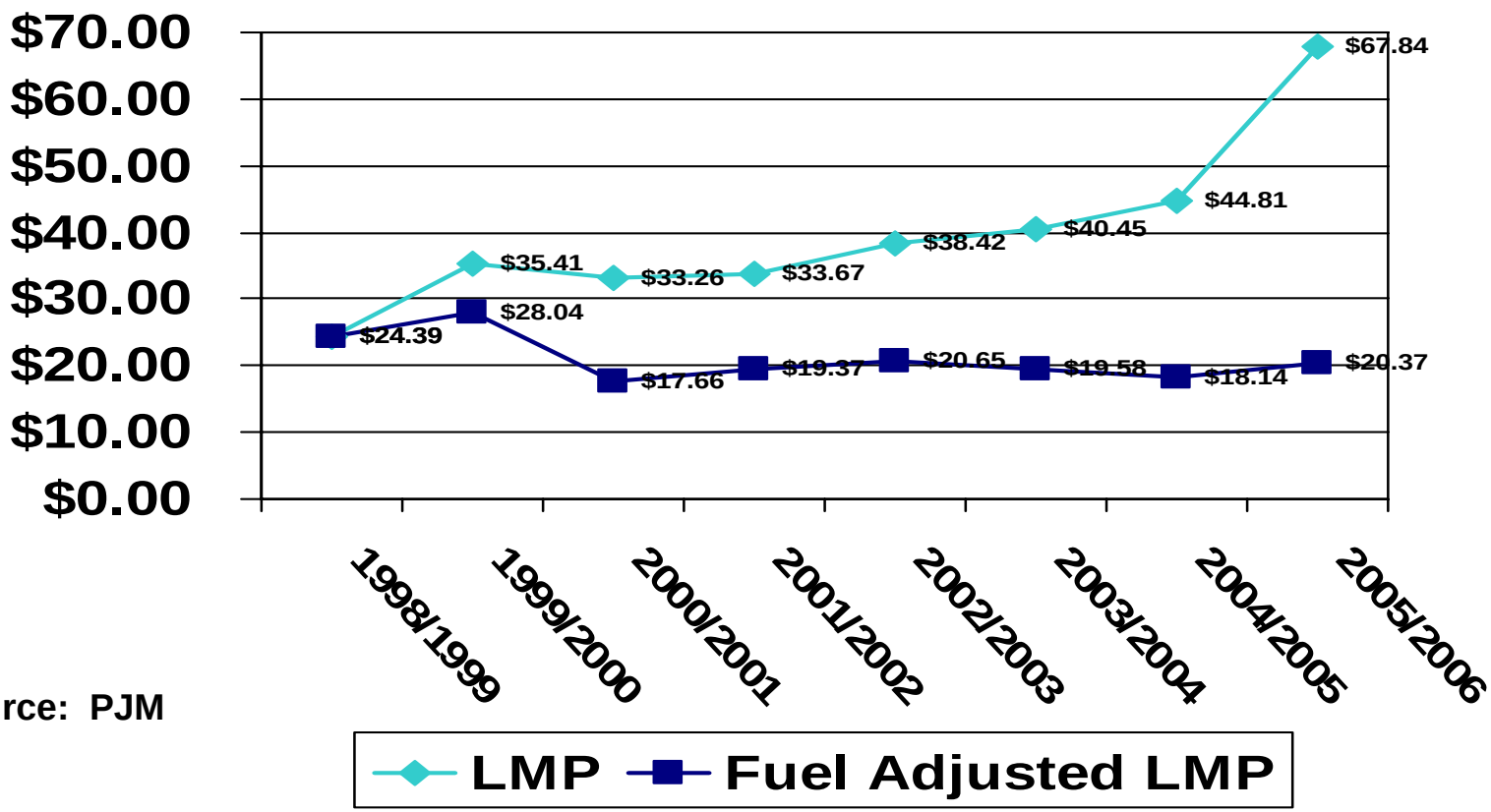
Energy and Capacity Markets: Congestion

- Congestion is the price premium certain loads pay for electricity when there is insufficient transmission to deliver lower cost electricity from remote generation
- Recent “New York Times” article cited Energy Department estimate of congestion costs to be approximately $8 billion in 2008 for the eastern United States or about $40 per person assuming a population of 200 million
- Congestion costs to Dover are minimized through forward purchases of energy from the market delivered to Dover/DPL zone. Estimates of the congestion cost to Dover for purchases from the PJM market are very small due to these forward purchases based on billings received from PJM
- Primary driver for increased energy costs is fuel

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Historic PJM Energy Cost

- PJM reports that on a fuel adjusted basis only, energy costs as defined by the pool average Locational Marginal Cost ("LMP") have been flat since 1998.



Source: PJM

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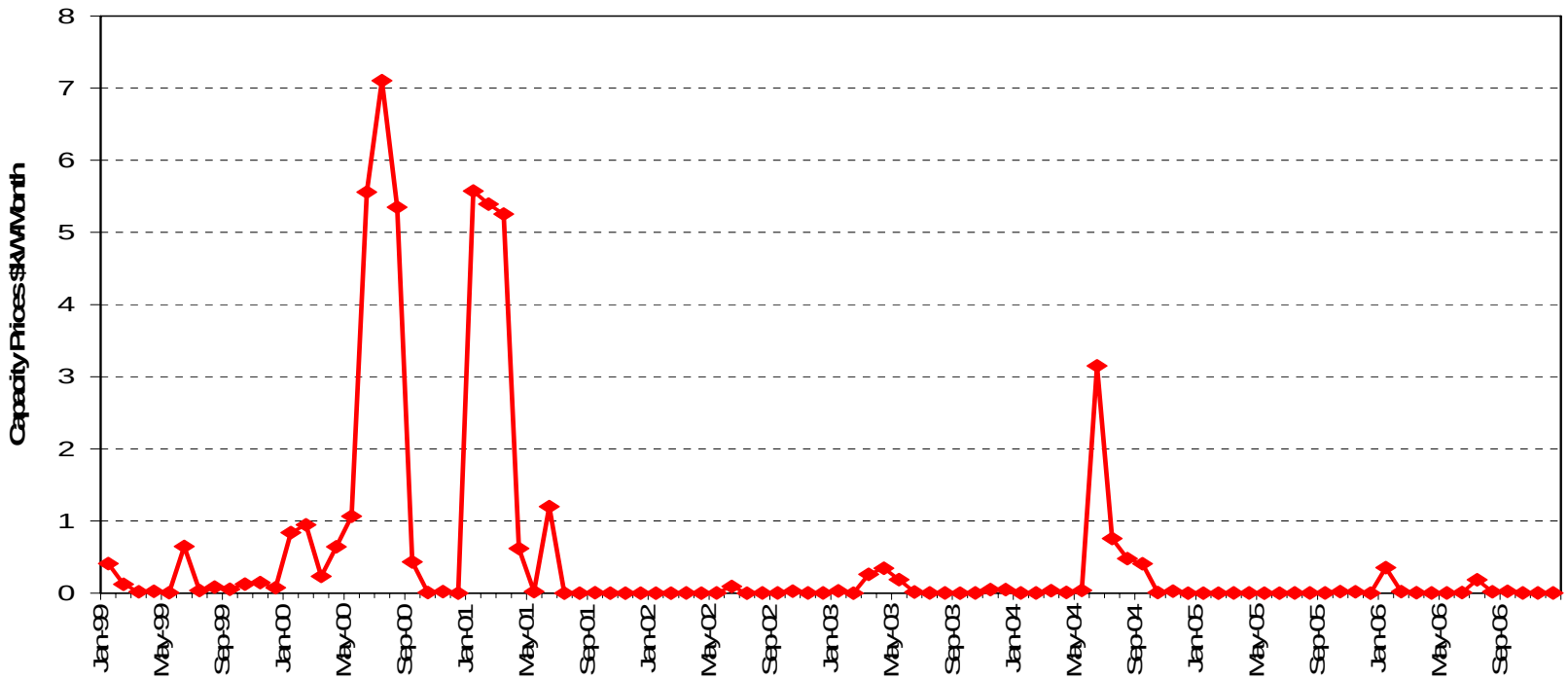
Development of the Capacity Markets in PJM



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Shortcomings of the Current PJM Capacity Market

- High volatility of capacity prices, most often near $0/kW-Month
- No long-term forward commitment
- Does not provide any locational value to capacity



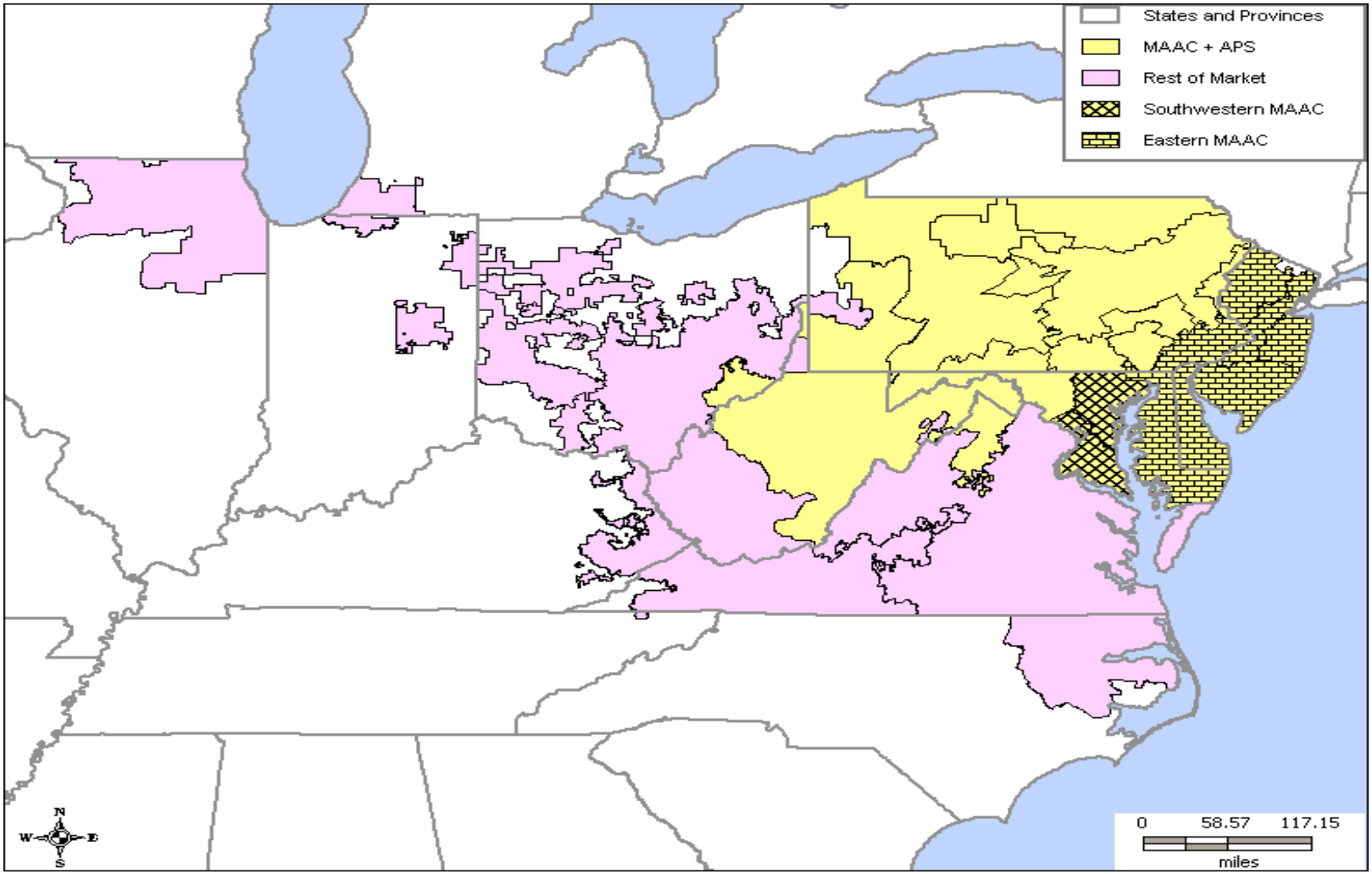
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December FERC Ruling on PJM Capacity Markets

- Capacity is valued on a locational basis, prices determined by new auction process
- Phased-in three-year look ahead for capacity commitments
- Dover's capacity requirements for load can be met by:
  - existing generation or purchases from the market
  - demand resources
- Laid out clear regulations applicable to Dover:
  - 4 Locational Deliverability Areas ("LDA") in the transition period (3 years)
  - Followed by PJM creating potentially 20+ new LDAs following the transition period

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Interim Period Locational Deliverability Areas



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Long Term PJM Locational Deliverability Areas (LDA's)

- Commonwealth Edison Company ("ComEd")
- American Electric Power ("AEP")
- Dominion
- Dayton Power and Light, and Duquesne Light Company;
- Virginia Power;
- Pennsylvania Electric Company ("Penelec")
- Allegany Power
- Atlantic City Electric Company;
- Baltimore Gas and Electric Company;
- Duquesne Light Company;
- Delmarva Power and Light Company
- PECO Energy Company
- Potomac Electric and Gas Company
- Public Service Electric and Gas Company
- Jersey Central Power and Light Company
- Metropolitan Edison Company
- PPL Electric Utilities Corporation
- PSEG northern region
- Delmarva southern region

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Impact to Customers and Generating Station Valuation



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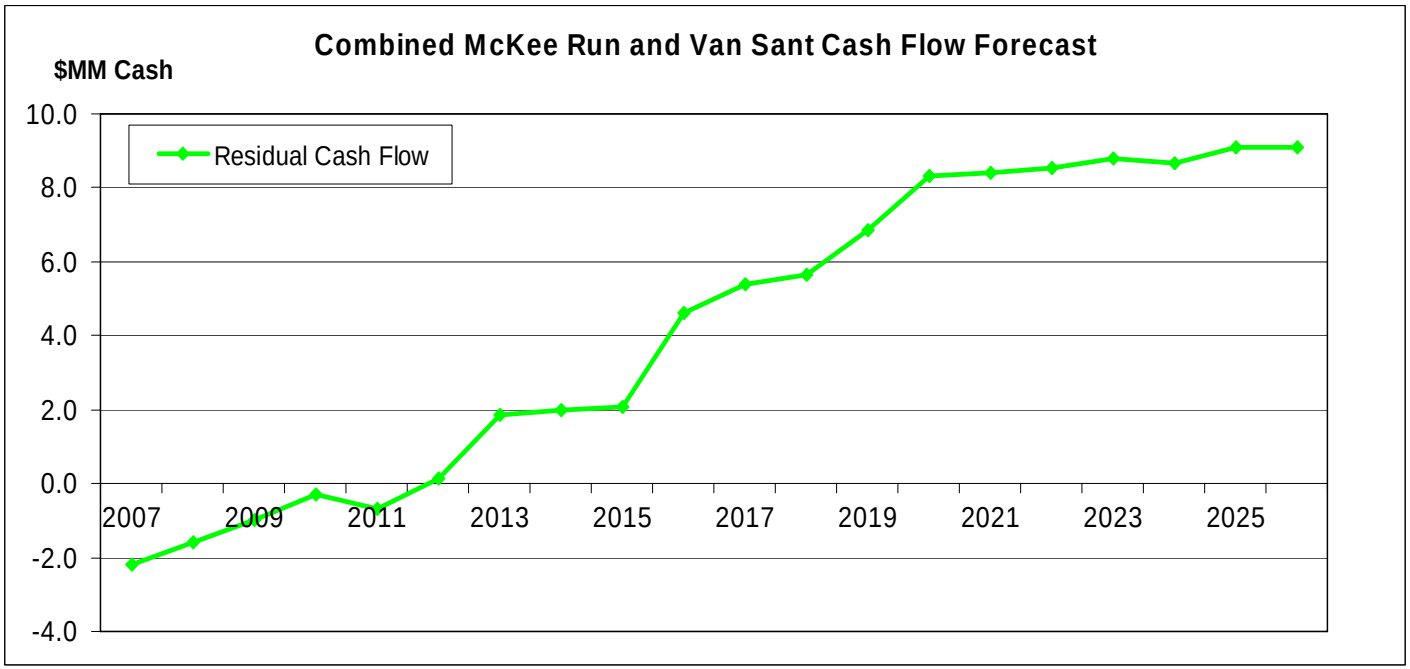
Impact to Customers

- Beginning in June 2007, Dover will be required to meet their capacity obligations through self supply, contracting with third parties or by purchasing from PJM
- The Capacity Market will have the effect of increasing the value of generating assets but requiring load serving entities to pay for the increased value of capacity
- Dover's generation capacity 170,000 kW will not meet the expected first year obligation of approximately 180,000-185,000 kW depending on final peak determination and reserve requirements.
- At a $10/kW-yr auction clearing price the expected annual revenue to the generating assets (Dover) is $1.7 million (170,000 kW x $10/kW-yr.)
- Costs to Dover's load at $10/kW-yr. is estimated at $1.8 million to $1.85 million (180,000-185,000 kW peak x $10/kw-yr.) or 0.23 cents per kWh
- Net costs to Dover (generation capacity revenue less cost to load) in the first year is estimated to be between $100,000 to $150,000.

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Generating Station Valuation

- With the new Capacity Markets, expected cash flow value of existing generating assets is approximately $39 million over 20 years
- Forward capacity value is critical to value of the assets representing the majority of value therein
- Pace and NAES continue to seek ways to reduce costs to reflect peaking operations and reduce or eliminate near term losses



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Cash Flows: Current Cost Structure

		1	2	3	4	5	6	7	8	9
		2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Cash Flows with Mckee Run and Vansant										
Energy Revenues	$000	9,524	9,919	8,547	6,861	8,103	12,734	14,383	15,512	15,520
Capacity Revenues	$000	1,085	1,589	2,293	3,289	3,066	3,547	5,194	5,283	5,374
Total Revenues	$000	10,609	11,508	10,840	10,150	11,169	16,281	19,577	20,795	20,894
Total Fuel and Variable Cost	$000	8,356	8,618	7,343	5,951	7,309	11,593	13,184	14,272	14,293
Gross Margin	**$000**	**2,253**	**2,890**	**3,497**	**4,199**	**3,859**	**4,689**	**6,392**	**6,523**	**6,602**
Fixed Operating Cost	$000	4,780	4,896	5,015	5,137	5,262	5,390	5,521	5,655	5,792
Revenue from Allowance Sales	$000	1,273	1,375	1,485	1,202	1,298	1,403	1,515	1,635	1,766
Cash Flow	**$000**	**(1,254)**	**(631)**	**(34)**	**264**	**(104)**	**702**	**2,386**	**2,503**	**2,575**
Debt Service	$000	(928)	(940)	(953)	(974)	(991)	(1,013)	(1,029)	(1,056)	(1,081)
Residual Cash Flow	**$000**	**(2,182)**	**(1,572)**	**(986)**	**(710)**	**(1,096)**	**(311)**	**1,357**	**1,447**	**1,494**
Cash Flows without Mckee Run and Vansant										
170 MW Capacity Purchase Cost	$000	(1,160)	(1,700)	(2,452)	(3,519)	(3,279)	(3,794)	(5,556)	(5,651)	(5,748)
Debt Service	$000	(928)	(940)	(953)	(974)	(991)	(1,013)	(1,029)	(1,056)	(1,081)
Residual Cash Flow	**$000**	**(2,088)**	**(2,640)**	**(3,405)**	**(4,493)**	**(4,270)**	**(4,807)**	**(6,585)**	**(6,707)**	**(6,830)**

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Cash Flows: Current Cost Structure

		10	11	12	13	14	15	16	17	18	19	20
		2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
Cash Flows with Mckee Run and Vansan												
Energy Revenues	$000	14,655	15,572	14,745	15,265	21,852	22,229	21,909	22,428	21,001	23,763	23,534
Capacity Revenues	$000	6,835	7,414	7,542	8,630	9,755	9,923	10,094	10,267	10,444	10,624	10,807
Total Revenues	$000	21,490	22,986	22,286	23,896	31,607	32,152	32,003	32,695	31,445	34,388	34,341
Total Fuel and Variable Cost	$000	13,493	14,270	13,390	13,868	20,022	20,362	19,996	20,333	19,114	21,519	21,350
Gross Margin	**$000**	**7,997**	**8,717**	**8,897**	**10,027**	**11,585**	**11,790**	**12,007**	**12,363**	**12,331**	**12,869**	**12,992**
Fixed Operating Cost	$000	5,933	6,077	6,225	6,376	6,531	6,690	6,853	7,019	7,190	7,364	7,543
Revenue from Allowance Sales	$000	1,907	2,059	2,224	2,402	2,450	2,496	2,543	2,590	2,639	2,689	2,739
Cash Flow	**$000**	**3,971**	**4,699**	**4,896**	**6,054**	**7,503**	**7,596**	**7,697**	**7,934**	**7,781**	**8,193**	**8,187**
Debt Service	$000	-	-	-	-	-	-	-	-	-	-	-
Residual Cash Flow	**$000**	**3,971**	**4,699**	**4,896**	**6,054**	**7,503**	**7,596**	**7,697**	**7,934**	**7,781**	**8,193**	**8,187**
Cash Flows without Mckee Run and Van												
170 MW Capacity Purchase Cost	$000	(7,312)	(7,931)	(8,067)	(9,232)	(10,434)	(10,614)	(10,797)	(10,983)	(11,172)	(11,365)	(11,560)
Debt Service	$000	-	-	-	-	-	-	-	-	-	-	-
Residual Cash Flow	**$000**	**(7,312)**	**(7,931)**	**(8,067)**	**(9,232)**	**(10,434)**	**(10,614)**	**(10,797)**	**(10,983)**	**(11,172)**	**(11,365)**	**(11,560)**

PACE | Global Asset Management

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City of Dover

January Monthly Report

Asset, Energy and Risk Management

This Report was produced by Pace Global Energy Services, LLC ("Pace Global") and is meant to be read as a whole and in conjunction with this disclaimer. Any use of this Report other than as a whole and in conjunction with this disclaimer is forbidden. Any use of this Report outside of its stated purpose without the prior written consent of Pace Global is forbidden. Except for its stated purpose, this Report may not be copied or distributed in whole or in part without Pace Global's prior written consent.

This Report and the information and statements herein are based in whole or in part on information obtained from various sources as of January 30, 2006. While Pace Global believes such information to be accurate, it makes no assurances, endorsements or warranties express or implied, as to the validity, accuracy or completeness of any such information, any conclusions based thereon, or any methods disclosed in this Report. Pace Global assumes no responsibility for the results of any actions and inactions taken on the basis of this Report. By a party using, acting or relying on this Report, such party consents and agrees that Pace Global, its employees, directors, officers, contractors, advisors, members, affiliates, successors and agents shall have no liability with respect to such use, actions, inactions, or reliance.

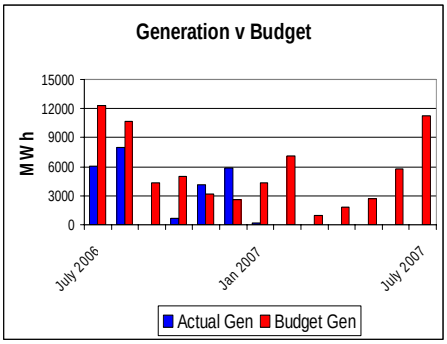
This Report does contain some forward-looking opinions. Certain unanticipated factors could cause actual results to differ from the opinions contained herein. Forward-looking opinions are based on historical and/or current information that relate to future operations, strategies, financial results or other developments. Some of the unanticipated factors, among others, that could cause the actual results to differ include regulatory developments, technological changes, competitive conditions, new products, general economic conditions, changes in tax laws, adequacy of reserves, credit and other risks associated with City of Dover and/or other third parties, significant changes in interest rates and fluctuations in foreign currency exchange rates.

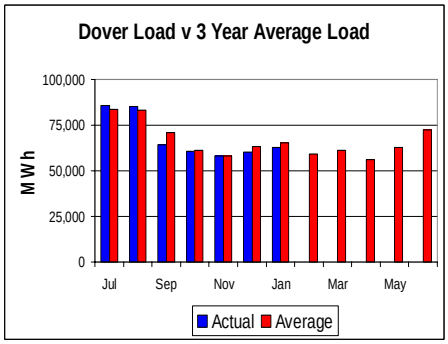
Further, certain statements, findings and conclusions in this Report are based on Pace Global's interpretations of various contracts. Interpretations of these contracts by legal counsel or a jurisdictional body could differ.

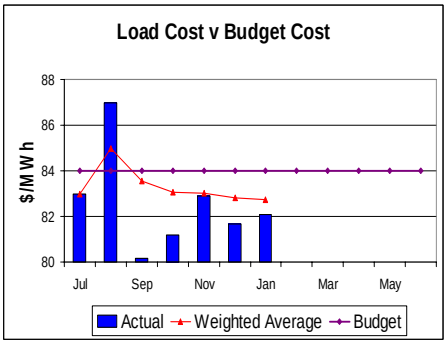
TABLE OF CONTENTS

Executive Summary 2
Purchased Power 3
Generation 4
Operations and Asset Management 5
Energy Management 9
Risk Management 12
Appendix 1 19
North American Energy Services January Report 19
Appendix 2 20
PJM Invoice Breakdown 20

EXECUTIVE SUMMARY







Generation and Asset Management

Net generation for the month of January credited by PJM was 232 MWh (McKee Run #2 ran out of merit only in early January to support local transmissions upgrades) compared to a budget of 4,500 MWh. Because the units ran out of merit order, a negative gross margin (or loss of $42,208) was realized.

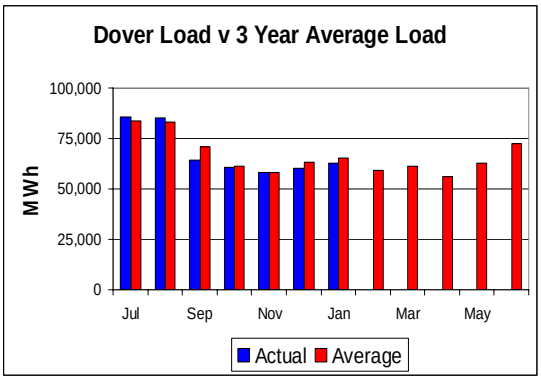
During the month of January, North American Energy Services reported that there were no lost time accidents, OSHA reportable incidents or environmental Notice of Violations. Costs attributable to the operations of the McKee Run and VanSant stations were $115,809 below a budget of $620,883 due to payroll timing timing (three budgeted, two realized) and lower than budgeted run times. For power year 2006-07, operations are $606,113 below a budget of $3,439,894.

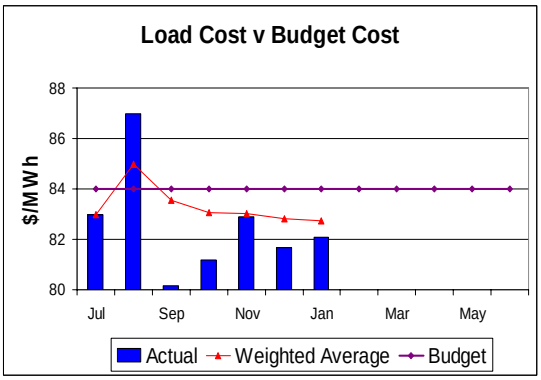
Energy and Risk Management

Wholesale load for the month of January was 62,701 MWh's verses a three year historic load of 65,300 MWhs. Purchased power (or hedges) accounted for 62,840 MWH's of this volume at a cost of $4.64 million. Purchases and sales as well as other PJM related charges accounted for an additional cost of $258,694 inclusive of all load related fees. Total purchased power costs for the month of January was $5.15 million resulting in an all in cost of power with fees of $82.07/MWh or $1.93/MWh below the targeted annual average of $84.00/MWh.

Dover is calculated to be 100% hedged on peak and 101% hedged off peak for an anticipated all in delivered cost of $82.77 for the 2006/07 power year. Hedging has begun for the 2007/08 power year and currently Dover is hedged 91% on peak and 80% off peak with a at market expected price of $83.40/MWh delivered to the Dover bus before any incentive fee paid to the Energy Manager. Hedging for 2008/09 and 2009/10 power years have also begun as described further in the report. All purchases are with investment grade entities. Based on current market conditions, certain hedges have moved to be "out of the money" or possess a negative market value to Dover. Credit is not currently required to be posted by the counterparties but such position is being closely monitored by Pace Asset Management.

PURCHASED POWER





January Hedges or Purchased Power

Counterparty	Volume (MWh)	Average Cost ($/MWh)	Cost to Dover ($ millions)
BP	18,600	73.10	1.36
Constellation	27,400	77.50	2.12
WPS	16,840	68.38	1.15
Connective (Capacity Only)	313 (equivalent cost)	5.00 (equivalent cost)	---
Total Energy Purchases	62,840	73.58	4.64
Dover Load	62,701	--	--

Balanced Purchased from PJM and Load Related Fees

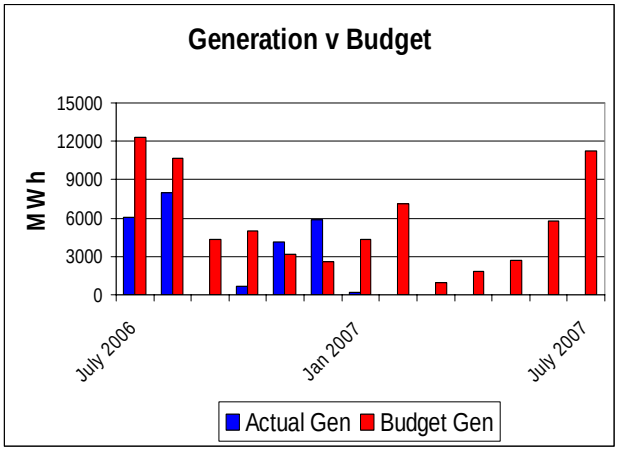
Purchased Power (Hedges) 62,840 MWh's @ $74.58/MWh:	$4,636,567
Power sold to PJM (139 MWh's) and Additional PJM Related Costs	$258,694
Total Cost to Serve Load (62,701 MWh's)	$4,895,261

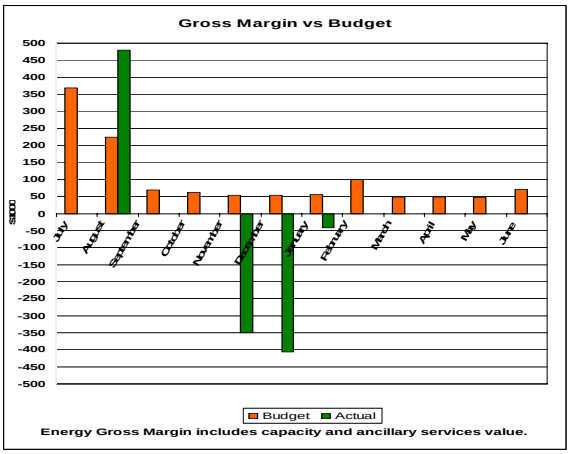
All in $/MWh load cost inclusive of Energy Manager Fees: $82.07/MWh

Highlights

- Declining market pricing resulted in below budget purchases for the month of January
- Generating units were not dispatch in merit order in the month due to soft prices, McKee Run #2 ran to support transmission work only in early January
- Due to economics, McKee #2 ran on gas in early January. No replacement oil has yet been purchased. Expect to purchase No. 2 oil in February to support VanSant, No. 6 oil inventories are adequate

GENERATION





Month – January 2007

		McKee Unit 1	McKee Unit 2	McKee Unit 3	MRS Facility	VanSant Unit 11	Total All Units
Capacity	MW	17	17	102	136	39	175
On Line Hours	Hrs	0	42.784	0	42.784	0	42.784
Starts	#	0	1	0	1	0	1
Gross Generation	MWh	0	307.171	0	307.171	0	307.171
Net Generation	MWh	0	285.314	0	285.314	0	285.314
Total Auxiliaries	MWh	41.80	63.657	178.468	367.524	40.438	407.962
Auxiliaries purchased	MWh	41.80	41.80	178.468	345.667	40.438	386.105
Fuel Gas Used	MMBTU	0	3,953,023	203,480*	4,156,503#*	0	4,156,503#*
Fuel Oil Used	MMBTU	0	0	0	0	0	0
Fuel Oil Used	Gallons	0	0	0	0	0	0
Total Fuel	MMBTU	0	3,953,023	203,480*	4,156,503#*	0	4,156,503#*
Net Heat Rate	BTU/KWh	NA	13,855	NA	13,855	NA	13,855
Unit Trips	#	0	0	0	0	0	0
Capacity Factor	%	0%	2.26%	0%	0.28%	0%	0.22%
Availability Factor	%	100%	100%	100%	100%	100%	100%
eFOR	%	0%	0%	0%	0%	0%	0%
HW Boiler Gas Usage	MMBTU				2,156,005		2,156,005
Pilot Gas Usage	MMBTU	0	141,105		141,105		141,105

January Emissions and to Date

	Tons emitted current month	Seasonal tons emitted year to date	Tons in Inventory
SOx	0	0	2,718
NOx	0	0	172

Highlights:

- McKee Run #2 ran for support of local transmission outages resulting in a $42,208 gross margin loss (fuel cost more than power)
- Sales of excess NOx allowances were approved in January. Expected income of approximately $165,000 based on a $960/per ton sale price.

OPERATIONS AND ASSET MANAGEMENT

Unit performance for the month of January is provided below

Month – January 2007							
		McKee Unit 1	McKee Unit 2	McKee Unit 3	MRS Facility	VanSant Unit 11	Total All Units
Capacity	MW	17	17	102	136	39	175
On Line Hours	Hrs	0	42.784	0	42.784	0	42.784
Starts	#	0	1	0	1	0	1
Gross Generation	MWh	0	307.171	0	307.171	0	307.171
Net Generation	MWh	0	285.314	0	285.314	0	285.314
Total Auxiliaries	MWh	41.80	63.657	178.468	367.524	40.438	407.962
Auxiliaries purchased	MWh	41.80	41.80	178.468	345.667	40.438	386.105
Fuel Gas Used	MMBTU	0	3,953,023	203,480*	4,156,503#*	0	4,156,503#*
Fuel Oil Used	MMBTU	0	0	0	0	0	0
Fuel Oil Used	Gallons	0	0	0	0	0	0
Total Fuel	MMBTU	0	3,953,023	203,480*	4,156,503#*	0	4,156,503#*
Net Heat Rate	BTU/KWh	NA	13,855	NA	13,855	NA	13,855
Unit Trips	#	0	0	0	0	0	0
Capacity Factor	%	0%	2.26%	0%	0.28%	0%	0.22%
Availability Factor	%	100%	100%	100%	100%	100%	100%
eFOR	%	0%	0%	0%	0%	0%	0%
HW Boiler Gas Usage	MMBTU				2,156,005		2,156,005
Pilot Gas Usage	MMBTU	0	141,105		141,105		141,105

 # Note: Does not include HWB or Pilot Gas

Unit Trips/Outages

During the month of January, Unit #2 at the McKee Run Facility was self dispatched on January 2nd and 3rd to support the City of Dover Electric Department while their line crews worked on upgrades to the 69KV electrical distribution system. The line work which required plant operation to support their line upgrade efforts has now been completed.

Other Events

During the month, Bob Sansone, Mike Corbett and Christopher Fancher from XL Insurance Services, the City of Dover's insurance carrier, toured the McKee Run and VanSant facilities to provide technical support and assistance to the plant in a number of areas. Transformer Oil test results were reviewed and it was determined that no corrective actions are needed at this time. The recommendation by XL Insurance was to continue to monitor and sample the transformer oil on a regular basis as is presently set up in the plant's preventative/predictive maintenance program. In addition, thermographic test results of the Unit 1 and 2 motor control centers and plant switchyard were reviewed with XL Insurance Services. There were several hot spots identified and work orders have been written up and entered into MAXIMO, the plant's computerized maintenance management system to ensure the discrepancies are corrected in a timely manner. XL Insurance will provide a detailed report of their site visit which will also include their

recommendations on plant improvements.

NAES proceeded to clean the McKee Run Fuel Oil Tank #2 that is now empty so that it can be assessed for either use as a holding tank for the remaining fuel in the McKee Run Fuel Oil Tank #1 or to take the tank completely out of service. We have not yet received the final report from the API 653 Inspection recently completed in early January. Once we receive the final report, the plant will submit their request for a time extension on the Out-of-Service Inspection required for McKee Run Tank #1 by June 30, 2007. We are also assessing quotes for the API 653 Inspection on the McKee Run Tank #2.

Action plans/objectives as part of the appraisal process for the coming year were mutually developed for all employees and have been finalized and were presented to them in January.

NAES is in the final stages of developing the Budget for the fiscal year 2007-2008. The last bit of information we need to complete the budget will not be available until January 31, 2007 at which time the budget will be submitted to Pace Global for final approval

Power Year to Date Performance is provided below:

Fiscal Year to Date *7/1/06-6/30/07*							
		McKee Unit 1	McKee Unit 2	McKee Unit 3	MRS Facility	VanSant Unit 11	Total All Units
Capacity	MW	17	17	102	136	39	175
On Line Hours	Hrs	184.134	190.018	411.608	785.760	107.120	892.880
Starts	#	6	5	21	32	31	63
Gross Generation	MWh	1,499.154	1,580.808	20,801.383	23,881.345	3,377.692	27,259.037
Net Generation	MWh	1,406.823	1,482.405	18,992.793	21,882.021	3,357.616	25,239.637
Total Auxiliaries	MWh	317.878	323.950	3,359.008	4,000.835	196.201	4,241.623
Auxiliaries purchased	MWh	225.547	225.547	1,550.418	2,001,511	176.125	2,222.223
Fuel Gas Used	MMBTU	13,478,640	17,386,555	152,716,243	183,581,439#	42,000,242	225,581,681#
Fuel Oil Used	MMBTU	8,547,961	3,177,772	84,820,428	96,546,161,	2,941,527	99,487,689
Fuel Oil Used	Gallons	57,177	21,256	565,969	644,402	21,083	661,485
Total Fuel	MMBTU	22,135,237	20,604,237	237,535,619	281,315,124#	44,941,770	325,069,370#
Net Heat Rate	BTU/KWh	15,734	13,900	12,551	12,847	13,385	12,918
Unit Trips	#	4	1	1	6	7	13
Capacity Factor	%	1.60%	1.69%	3.61%	3.12%	1.67%	2.80%
Availability Factor	%	97.12%	98.01%	99.34%	98.16%	98.94%	98.35%
eFOR	%	1.35%	4.24%	0.66%	1.20%	0.0%	0.93%
HW Boiler Gas Usage	MMBTU				11,793,134		11,793,134
Pilot Gas Usage	MMBTU	526,200	822,562		1,348,762		1,348,762

 # Note: Does not include HWB or Pilot Gas

Environmental, Health and Safety

There were no Notice of Violations or Environmental excursions during the month. There was one opacity deviation during the month which occurred on January 2, 2007 and Unit 2 during full cycle soot blowing. It was the first time the unit had operated since December 13, 2006.

The 2006 Annual and Semi-Annual Air Compliance Certifications for the McKee Run and VanSant

Generating Facilities were completed and submitted to DNREC and the EPA. Included in the submission was the Quarterly Opacity Report for VanSant Generating Station and the Semi-Annual Operating Report for VanSant. Also during January, the Quarterly EDR's (Electronic Data Reports) were filed for McKee Run Unit 3 and VanSant Unit 11. The audit feedback from the EPA and the Clean Air Market Division MDC check (Monitoring Plan Data Checking Software) stated that no errors were found.

Emissions Allowances

For the month of January no tons of SOx and less than 1 ton of NOx were emitted. Emissions verse banked allowances are cited below;

	Tons emitted current month	Tons emitted year to date	Tons in Inventory
SOx	0	0	2,718
NOx	0	0	172

Current market pricing (2/15) for allowances are $497/ton for SOx and $960/ton for NOx.

Note, NOx allowance retirement is only applicable to generation during the Ozone Season or generation between May 1 and September 30 of each calendar year.

Generation Financial Performance

Per the table below, the McKee and VanSant station experienced a net gross margin loss of $42,208 on energy sales for the month of January due to the fact the units ran out of merit (reliability reasons) to support transmission related work performed by the City's electric distribution department.

Summary of Generation Sales and Fuel Purchases

Transaction	Volumes	Revenue/Cost
PJM Invoice for Power Sold	232 MWh's	$10,695
Fuel and Transport	7,225 dth gas	$57,881
Net Generation Revenue	232 MWh's	$47,186

* Excludes Black Start revenue shown in January estimates, such revenue is included below

Plus Other Revenue

Black Start:	$4,978
Less Net Generation Revenue	($47,186)
Realized margin for January	($42,208)

Operating Costs

Operating Costs for the month of January were $505,074 (budget $620,883) or better than budget by $115,809 due to timing of insurance costs and lower than expected labor costs and scheduling of certain maintenance activities. A breakdown of operating costs for January and year to date are provided below:

Financial – Current Month

Month – January 2007			
	Actual	Budget	Variance
Personnel	265,393	372,632	107,329
Administrative	181,056	147,169	(33,887)
EH & S	20,310	7,500	(12,810)
Maintenance Expense	14,145	39,050	24,905
Operations Expense	24,169	54,532	30,363
Total	**$505,074**	**$620,883**	**$115,809**

Financial – Fiscal Year to Date

Number of Months – 7			
	Actual	Budget	Variance
Personnel	1,749,578	1,940,893	191,315
Administrative	681,891	667,018	(14,873)
EH & S	33,369	57,000	23,631
Maintenance Expense	268,261	386,850	118,589
Operations Expense	100,682	388,133	287,451
Total	**$2,833,781**	**$3,439,894**	**$606,113**

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Purchased Power and Volumes and Pricing

Purchased power for the month of January is summarized below. This power serves to hedge or protect Dover from the volatility of the wholesale power markets.

Counterparty	Volume (MWh)	Average Cost ($/MWh)	Cost to Dover ($ millions)
BP	18,600	73.10	1.36
Constellation	27,400	77.50	2.12
WPS	16,840	68.38	1.15
Connective (Capacity Only)	313 (equivalent cost)	5.00 (equivalent cost)	---
Total Energy Purchases	62,840	75.58	4.64

Total volume of power delivered to the Dover bus was 62,701 MWh's requiring Dover to sell 139 MWh's from the PJM market for the month of January.

Summary of Dover Load Costs

Purchased Power (Hedges) 62,840 MWh's @ $75.58/MWh: $4,636,567

Power sales to PJM (139 MWh's) and Additional PJM Related Costs[1] $258,694

Energy Manager Fee and Incentive (Fee @ $2.76/MWh, Incentive @ $1.24/MWh) $250,804

Total Cost to Serve Load (62,701 MWh's) $5,146,065

Cost per MWh $82.07

[1] Includes transmission charges, reserve charges, etc. See Appendix 2 for details.

Purchased Commodity Gas Volumes and Pricing

Mild weather and lower loads in PJM yielded lower on and off-peak market prices which did not warrant running of either the McKee Run or Van Sant generators except for reliability purposes which they did on gas in early January.

Date	Volume (Dth)	Price ($/Dth)	Total Commodity Cost ($)
12/29	650	6.40	4,160
12/29	1,950	6.40	12,480
1 / 2	2,000	5.79	11,580
1/12	400	6.15	2,460
1/19	300	6.49	1,947
1/26	375	7.75	2,906
Total Cost	5,675		35,533

Gas was purchased to maintain the fuel oil inventories at McKee Run at approximately 140 degrees. A firm delivery of natural gas is required to maintain this temperature. This firm delivery base load gas supply has been purchased from the Hess Corporation. The Details of this deal are as follows:

Firm Gas Supply	Price Per dth	Total Cost
50 dth/day	$7.05	$10,928

Gas Transportation Purchased

Eastern Shore Natural Gas Pipeline and TransCo agreements provide for deliveries to the McKee Run and VanSant stations. These charges include a firm demand charge and prior period adjustments as follows:

ESNG FT Demand Charge	$4,342
TransCo FT Demand Charge	$3,192
Total Purchases	$7,534

Other Gas Purchases

Due to the units being run for reliability, gas was purchased from the pipeline. Pace Global Asset Management made every effort possible to minimize the cash out exposure of being long on the pipeline. Below are the imbalances and demand charges from Eastern Shore Pipeline.

Imbalance (dth)	Estimated $/dth	Estimated Total Cos
(68)	$7.80	($530.40)

Transport	Volume	Estimated $/dth	Estimated Total Cost
Firm	1,500	$0.017	($25.50)
IT	5,675	$0.5866	($3,330)

Purchased Commodity Fuel Oil Summary

No fuel oil was burned or purchased during the month January, inventories of No.2 at VanSant will require purchases in February.

Oil Inventory as of January 31:

6 Oil: 1,304,646 gallons
#2 Oil: 132,480 gallons

RISK MANAGEMENT

2006 - 2007 Power Year Hedge Position

As of February 14th, estimated power consumption for Power Year 2006-2007 was hedged at 100% peak and 101% off-peak. Hedge volumes are based on the three year historical load profile of Dover at the Dover bus prior to any distribution losses to the retail meter. As shown below at these hedge levels an all in price to Dover is estimated at $82.77/MWh for the 2006/2007 power year. The 10 day value at risk (with an adverse market movement in commodity and load following) could increase this target number to $84.32/MWh.

Price Date 2/14/2007	**Forward Hedge % Power Year 2006-07**	
	Peak	**100%**
	Off Peak	**101%**

	At Market	At Market + Risk*
Energy Cost	**$71.61**	**$71.75**
Incentive Non-Energy Items		
LSE Capacity	$0.01	$0.01
Load Following	$3.59	$5.00
FRC Margin	$0.00	$0.00
	$3.60	$5.01
Pass-Through Items		
Transmission	$2.19	$2.19
Ancillary	$1.37	$1.37
Losses	$0.00	$0.00
	$3.56	$3.56
Add Pace Fees	$2.76	$2.76
Total Cost	**$81.53**	**$83.08**
Add Incentive	$1.24	$1.24
Current Expected	$82.77	$84.32

** Includes estimate of 10-Day VaR & LF Risk*

Includes actual through Dec 2006

2007 - 2008 Power Year Hedge Position

For power year 2007-2008, the estimated power consumption was hedged 91%% peak and 80% off-peak. Hedge volumes are based on the three year historical load profile at the Dover bus prior to any distribution losses to the retail meter. As shown below at these hedge levels an all in price to Dover is estimated at $83.40/MWh before any incentive fee. Incentive fee will be estimated once the benchmark cost of supply is established for the 2007-2008 power year. The 10 day value at risk (with an adverse market movement in commodity and load following) could increase this target number to $85.61/MWh.

Price Date 2/14/2007	**Forward Hedge % Power Year 2007-08**	
	Peak	**91%**
	Off Peak	**80%**

	At Market	At Market + Risk*
Energy Cost	**$72.81**	**$73.52**
Incentive Non-Energy Items		
LSE Capacity	$0.01	$0.01
Load Following	$3.50	$5.00
FRC Margin	$0.00	$0.00
	$3.51	$5.01
Pass-Through Items		
Transmission	$2.24	$2.24
Ancillary	$2.00	$2.00
Losses	$0.00	$0.00
	$4.24	$4.24
Add Pace Fees**	$2.84	$2.84
Total Cost	**$83.40**	**$85.61**
Add Incentive		
Current Expected	$83.40	$85.61

** Includes estimate of 10-Day VaR & LF Risk*
*** No load growth assumed*

2008 - 2009 Power Year Hedge Position

For power year 2008-2009, the estimated power consumption was hedged 14.6% peak and 18.7% off-peak. Hedge volumes are based on the three year historical load profile at the Dover bus prior to any distribution losses to the retail meter. As shown below at these hedge levels an all in price to Dover is estimated at $79.98/MWh before any incentive fee. Incentive fee will be estimated once the benchmark cost of supply is established for the 2008-2009 power year. The 10 day value at risk (with an adverse market movement in commodity and load following) could increase this target number to $84.84/MWh.

Price Date 2/14/2007	**Forward Hedge % Power Year 2008-09**	
	Peak	**14.6%**
	Off Peak	**18.7%**

	At Market	At Market + Risk*
Energy Cost	**$69.30**	**$72.66**
Incentive Non-Energy Items		
LSE Capacity	$0.01	$0.01
Load Following	$3.50	$5.00
FRC Margin	$0.00	$0.00
	$3.51	$5.01
Pass-Through Items		
Transmission	$2.24	$2.24
Ancillary	$2.00	$2.00
Losses	$0.00	$0.00
	$4.24	$4.24
Add Pace Fees**	$2.93	$2.93
Total Cost	**$79.98**	**$84.84**
Add Incentive		
Current Expected	$79.98	$84.84

** Includes estimate of 10-Day VaR & LF Risk*
*** No load growth assumed*

2009 - 2010 Power Year Hedge Position

For power year 2009-2010, the estimated power consumption was hedged 14.5% peak and 18.4% off-peak. Hedge volumes are based on the three year historical load profile at the Dover bus prior to any distribution losses to the retail meter. As shown below at these hedge levels an all in price to Dover is estimated at $78.25/MWh before any incentive fee. Incentive fee will be estimated once the benchmark cost of supply is established for the 2008-2009 power year. The 10 day value at risk (with an adverse market movement in commodity and load following) could increase this target number to $81.97/MWh.

Price Date 2/14/2007	**Forward Hedge % Power Year 2009-10**	
	Peak	**14.5%**
	Off Peak	**18.4%**

	At Market	At Market + Risk*
Energy Cost	**$67.48**	**$69.96**
Incentive Non-Energy Items		
LSE Capacity	$0.01	$0.01
Load Following	$3.50	$5.00
FRC Margin	$0.00	$0.00
	$3.51	$5.01
Pass-Through Items		
Transmission	$2.24	$2.24
Ancillary	$2.00	$2.00
Losses	$0.00	$0.00
	$4.24	$4.24
Add Pace Fees**	$3.02	$3.02
Total Cost	**$78.25**	**$82.23**
Add Incentive		
Current Expected	$78.25	$81.97

** Includes estimate of 10-Day VaR & LF Risk*
*** No load growth assumed*

Credit and Counterparty Position

Pace Global Asset Management continues to monitor the in the money or out of the money position with each of the power purchases Dover has transacted for to reduce it risk profile to its load obligations. Below are summaries or the power purchases made by Dover, their corresponding credit position, term, volumes and pricing.

Dover: Counterparty Credit Risk

Date: February 13, 2007

10-day Credit Risk ($000) - 97.5% Confidence Level

Counterparty	Credit Rating	Tenor (months)	Credit Limit	Comment	With Offsets				Without Offsets			
					Mark-to-Market	Low Price Outcome	High Price Outcome	Line Availability	Mark-to-Market	Low Price Outcome	High Price Outcome	Line Availability
Sempra Energy Trading	AA	1	$20,000	**Moody's Credit Rating A1**	($655)	($3,383)	$2,073	$20,000	$2,695	$1,639	$4,405	$17,305
Constellation	AA-	1	$15,000	**Moody's Credit Rating A1**	($1,302)	($2,067)	($538)	$15,000	$0	$0	$55	$15,000
BP Energy	AA-	1	$20,000	**Moody's Credit Rating A1**	($1,193)	($3,845)	$1,459	$20,000	$2,940	$1,691	$4,530	$17,060
Conectiv	BBB-	1	$10,000	**Moody's Credit Rating Baa3**	$18	($609)	$644	$9,982	$34	$0	$644	$9,966
WPS	AA-	1	$15,000	**Moody's Credit Rating A1**	($617)	($1,678)	$445	$15,000	$286	$56	$920	$14,714

2006-2007 power year transactions are cited below:

Power Year 2006/07 Transaction Detail

ID	Counterparty	Timeblock	Quality	Trade Date	Buy/Sell	Start Date	End Date	Volume	Allocation	Hedged Price
2	BP Energy	On Peak 5x16	Firm	6/22/2006	Buy	7/1/2006	6/30/2007	25	MW per hour	$90.25
7	BP Energy	Off Peak 5x8+2x24	Firm	6/22/2006	Buy	7/1/2006	6/30/2007	25	MW per hour	$57.70
1	Conectiv	On Peak 5x16	Firm	6/22/2006	Buy	7/1/2006	9/30/2006	25	MW per hour	$95.00
6	Conectiv	Off Peak 5x8+2x24	Firm	6/22/2006	Buy	7/1/2006	9/30/2006	25	MW per hour	$56.00
3	Constellation	On Peak 5x16	Firm	6/27/2006	Buy	7/1/2006	6/30/2007	50	MW per hour	$88.50
4	Constellation	On Peak 5x16	Firm	6/27/2006	Buy	7/1/2006	8/31/2006	30	MW per hour	$90.50
8	Constellation	Off Peak 5x8+2x24	Firm	6/27/2006	Buy	7/1/2006	6/30/2007	25	MW per hour	$57.75
9	Constellation	Off Peak 5x8+2x24	Firm	6/27/2006	Buy	7/1/2006	8/31/2006	25	MW per hour	$56.65
5	WPS	On Peak 5x16	Firm	7/12/2006	Buy	10/1/2006	6/30/2007	20	MW per hour	$84.71
10	WPS	Off Peak 5x8+2x24	Firm	7/12/2006	Buy	10/1/2006	6/30/2007	25	MW per hour	$56.65

Power year 2007-2008, 2008-2009 and 2009-2010 transactions are cited below:

Power Year 2007/08 Transaction Detail

ID	Counterparty	Timeblock	Quality	Trade Date	Buy/Sell	Start Date	End Date	Volume	Allocation	Hedged Price
47	Sempra Energy Trading	On Peak 5x16	Firm	12/27/2007	Buy	3/1/2008	4/30/2008	25	MW per hour	$76.35
48	Sempra Energy Trading	On Peak 5x16	Firm	12/27/2007	Buy	5/1/2008	5/31/2008	50	MW per hour	$71.35
49	Sempra Energy Trading	On Peak 5x16	Firm	12/27/2006	Buy	6/1/2008	6/30/2008	75	MW per hour	$85.75
50	Sempra Energy Trading	Off Peak 5x8+2x24	Firm	12/27/2006	Buy	5/1/2008	6/30/2008	25	MW per hour	$44.50
51	Sempra Energy Trading	Off Peak 5x8+2x24	Firm	12/27/2006	Buy	7/1/2007	6/30/2008	5	MW per hour	$66.30
52	Sempra Energy Trading	On Peak 5x16	Firm	12/27/2006	Buy	7/1/2007	6/30/2008	5	MW per hour	$66.30
27	WPS	On Peak 5x16	Firm	10/25/2006	Buy	12/1/2007	12/31/2007	20	MW per hour	$85.50
28	WPS	On Peak 5x16	Firm	10/25/2006	Buy	1/1/2008	2/29/2008	10	MW per hour	$101.00
29	WPS	On Peak 5x16	Firm	10/26/2006	Buy	7/1/2007	8/31/2007	20	MW per hour	$112.00
30	WPS	On Peak 5x16	Firm	10/26/2006	Buy	9/1/2007	9/30/2007	30	MW per hour	$77.00
32	WPS	On Peak 5x16	Firm	10/27/2006	Buy	10/1/2007	11/30/2007	20	MW per hour	$75.00
33	WPS	Off Peak 5x8+2x24	Firm	10/27/2006	Buy	7/1/2007	6/30/2008	10	MW per hour	$53.30

Power Year 2008/09 Transaction Detail

ID	Counterparty	Timeblock	Quality	Trade Date	Buy/Sell	Start Date	End Date	Volume	Allocation	Hedged Price
53	Sempra Energy Trading	On Peak 5x16	Firm	1/4/2007	Buy	7/1/2008	6/30/2009	15	MW per hour	$69.05
54	Sempra Energy Trading	Off Peak 5x8+2x24	Firm	1/4/2007	Buy	7/1/2008	6/30/2009	15	MW per hour	$69.05

Power Year 2009/10 Transaction Detail

ID	Counterparty	Timeblock	Quality	Trade Date	Buy/Sell	Start Date	End Date	Volume	Allocation	Hedged Price
55	Sempra Energy Trading	On Peak 5x16	Firm	1/4/2007	Buy	7/1/2009	6/30/2010	15	MW per hour	$68.35
56	Sempra Energy Trading	Off Peak 5x8+2x24	Firm	1/4/2007	Buy	7/1/2009	6/30/2010	15	MW per hour	$68.35

APPENDIX 1

NORTH AMERICAN ENERGY SERVICES JANUARY REPORT

APPENDIX 2

PJM INVOICE BREAKDOWN

The PJM bill is a record of all Electricity Transactions, Transmission Services, Ancillary Services and Miscellaneous fees that allow the PJM to operate. Below is a list of the line items on the PJM bill including all generator activity.

PJM Line Items	Load	Gen	Net
DA Energy	($113,055.92)	10,160.22	($102,895.70)
RT Energy	$38,762.42	617.80	$39,380.22
Regulation Charges	($26,895.95)	0.00	($26,895.95)
Day Ahead Operating Reserves Charges	($4,582.19)	0.00	($4,582.19)
Balancing Operating Reserves Charges	($1,989.07)	(394.77)	($2,383.84)
Network Integration Transmission Service Charges	($145,641.41)	0.00	($145,641.41)
Transmission Owner Scheduling System Control and Dispatch Service Charges	($4,658.66)	0.00	($4,658.66)
PJM Scheduling System Control and Dispatch Service Charges	($18,201.36)	0.00	($18,201.36)
Synchronous Condensing Charges	($1,934.02)	0.00	($1,934.02)
Synchronized Reserve Charges	($12,949.53)	0.00	($12,949.53)
Reactive Supply and Voltage Control from Generation Sources Service Charges	($22,353.15)	0.00	($22,353.15)
Reactive Services Charges	($70.56)	0.00	($70.56)
Black Start Service Charges	($1,122.63)	0.00	($1,122.63)
Auction Revenue Rights Credits	$69,918.33	0.00	$69,918.33
Black Start Service Credits	$0.00	4,977.77	$4,977.77
Real-time Economic Load Response Program Charges	($3,325.51)	0.00	($3,325.51)
Expansion Cost Recovery Charges	($415.29)	0.00	($415.29)
Generation Deactivation (DPL Zone) Charges - Dec 2006	($5,202.48)	0.00	($5,202.48)
Non-Firm Point-to-Point Transmission Service Credits	$997.72	0.00	$997.72
Transmission Losses (Point-to-Point) Credits	$3,017.92	0.00	$3,017.92
PPA	($2,230.81)	0.00	($2,230.81)
	($251,932.15)	15,361.02	($236,571.13)

Due to the Settlement of Transmission Rate Case ER05-515: Pepco/ Dpl the city is entitled to an estimated refund of $512,640 to be spread over 12 months beginning in June -06. The credit comes through on the PJM bill as a reduction in the rate charged by DPL for Network transmission service. Pace will track this credit to ensure the proper refund is received by the city. The savings by month is as follows:

June-06:	$91,577.42
July-06:	$94,630.00
Aug-06:	$94,630.00
Sept-06	$91,577.42
Oct-06	$94,630.00
Nov-06	$94,630.00 (being researched, appears to be an over refund)

Note: There will be many various prior period adjustments that will flow through on every invoice. These adjustments are for the most part small. However, unless the city has made an agreement these prior periods adjustment should be billed back to Duke.

North American Energy Services
Dover, DE

January 2007

Monthly Report



Winter has come to McKee Run Generating Station

Table of Contents

1.0 Executive Summary

2.0 Environmental Health and Safety

3.0 Financial

4.0 Operations

5.0 Maintenance

6.0 Engineering

7.0 Summary of NAES Performance

1.0 Executive Summary

Calendar of Events	*Date*
Operate Unit(s) to Support City of Dover 69KV Line Outages	November 28 - December 1, 2006 December 4 - 7, 2006 December 11 – 15, 2006 December 18 – 22, 2006 January 2 – 5, 2007
XL Insurance Services – Site visit	January 23 -25, 2007
McKee Run & VanSant Annual Title V Certification Due	January 31, 2007
Unit 3 Annual Outage and #1 Fuel Oil Tank Inspection (?)	March 19 – March 26, 2007
Two Year Accident Free Target	April 5, 2007
Unit 11 Annual Outage	April 16 – 29, 2007
Unit 1 Annual Outage	October 8 - 15, 2007
Unit 2 Annual Outage	October 15 - 22, 2007

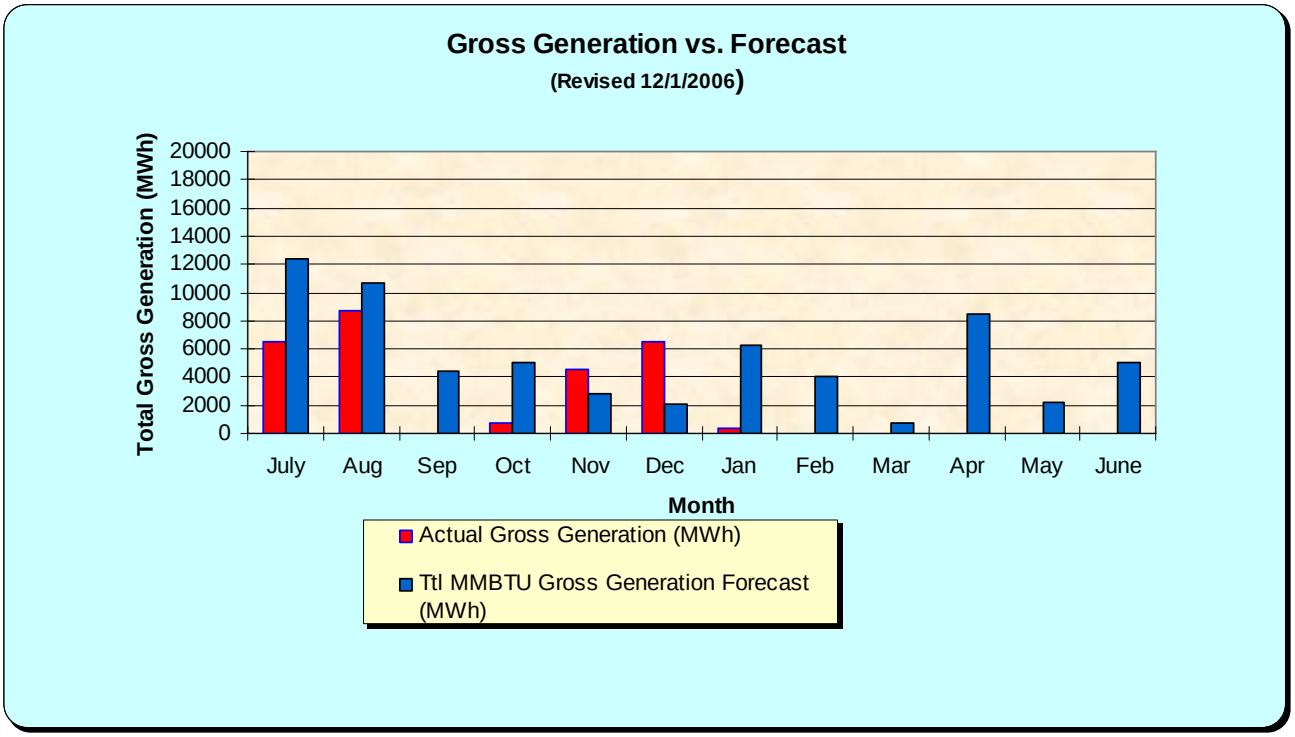
Environmental, Health, and Safety

	Month (January 2007)	*Fiscal Year to Date 7/1/06-6/30/07*
NOVs	0	0
Opacity Deviations	1	35
Environmental Deviations	0	0
OSHA Recordable	0	0
OSHA LTA's	0	0

Operations

	Month (January 2007)	*Fiscal Year to Date 7/1/06-6/30/07*
Net Station Output (MWH) – Note 1	307.71	27,259.037
Period Hours	744	20,640
On line Hours	42.784	892.880
Planned Outage Hours	0	176.817
Maintenance Outage Hours	0	54.667
Forced Outage Hours	0	108.575
Reserve Shutdown Hours	2,933.216	19,406.841
Equivalent Forced Outage Hours	0	214.57
Station Availability - Note 2	100%	98.07%

Note 1 – Net Station Output does not include station auxiliaries when units are off line.
Note 2 – Availability is calculated using service hours + reserve shutdown hrs divided by hours in period.


Gross Generation vs. Forecast
(Revised 12/1/2006)
Total Gross Generation (MWh)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
July
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
June
Month
Actual Gross Generation (MWh)
Ttl MMBTU Gross Generation Forecast (MWh)

2.0 Environmental, Health and Safety

During the month of January, there were no employee or contractor related injuries or illnesses. The annual OSHA Form 300A, Summary of Work-Related Injuries and Illnesses was completed and posted in the front office prior to the February 1 due date. A copy of the completed OSHA form was also forwarded to the NAES Safety Director, Mike Gallagher

There were no Notice of Violations or Environmental excursions during the month. There was one opacity deviation during the month which occurred on January 2, 2007 and Unit 2 during full cycle soot blowing. It was the first time the unit had operated since December 13, 2006.

The 2006 Annual and Semi-Annual Air Compliance Certifications for the McKee Run and VanSant Generating Facilities were completed and submitted to DNREC and the EPA. Included in the submission was the Quarterly Opacity Report for VanSant Generating Station and the Semi-Annual Operating Report for VanSant. Also during January, the Quarterly EDR's (Electronic Data Reports) were filed for McKee Run Unit 3 and VanSant Unit 11. The audit feedback from the EPA and the Clean Air Market Division MDC check (Monitoring Plan Data Checking Software) stated that no errors were found.

Safety Statistics

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	FYTD
Hours Worked	5,389.5	5,697.75	5129.5	5,454	5,101.5	5,089.5	5,506						37,367.75
First Aid cases	0	0	0	0	0	0	0						0
OSHA Recordable	0	0	0	0	0	0	0						0
Lost Time Accidents	0	0	0	0	0	0	0						0
Restricted Workday Accident	0	0	0	0	0	0	0						0
Near Miss	0	1	0	0	0	0	0						1

Date last OSHA Recordable	**4/05/05**
Date last Lost Time Accident	**4/05/05**
Days since last OSHA recordable	**666**
Days since last Lost Time Accident	**666**

Emissions (NOx & SO2) All data thru 1/31/07

NOx Summary - Year (May-Sept.)Tons					
Year	*Unit #1*	*Unit #2*	*Unit #3*	*Unit #11*	*TOTAL*
2002	17.34	14.38	175.76	6.01	213.49
2003	9.34	7.84	127.36	2.45	146.99
2004	3.38	2.74	98.76	7.55	112.43
2005	20.16	20.64	103.3	2.19	146.29
2006	1.82	1.78	19.25	1.72	24.57
2007	0	0	0	0	0

SO2 Summary - Year (Jan.-Dec.)Tons					
Year	*Unit #1*	*Unit #2*	*Unit #3*	*Unit #11*	*TOTAL*
2002	23.43	24.93	696.91	6.38	751.65
2003	22.77	18.89	490.14	2.35	534.15
2004	10.96	9.64	489.44	1.45	490.89
2005	49.91	52.08	530.24	2.30	634.69
2006	3.69	1.51	69.92	0.24	75.36
2007	0	0	0	0	0

2.1 Training

During the month of January, members of the 2007 Employee Safety Committee were selected and given instruction on the responsibilities of safety committee members. No other EH & S training was held during the month.

3.0 Financial

Financial – Current Month

	Month – January 2007		
	Actual	Budget	Variance
Personnel	265,393	372,632	107,329
Administrative	181,056	147,169	(33,887)
EH & S	20,310	7,500	(12,810)
Maintenance Expense	14,145	39,050	24,905
Operations Expense	24,169	54,532	30,363
Total	**$505,074**	**$620,883**	**$115,809**

Financial – Fiscal Year to Date

	Number of Months - 7		
	Actual	Budget	Variance
Personnel	1,749,578	1,940,893	191,315
Administrative	681,891	667,018	(14,873)
EH & S	33,369	57,000	23,631
Maintenance Expense	268,261	386,850	118,589
Operations Expense	100,682	388,133	287,451
Total	**$2,833,781**	**$3,439,894**	**$606,113**

3.1 Variance analysis

For the month of January, we had a favorable variance of 115,809. The variance was due to the following:

PERSONNEL EXPENSES - Labor, overtime, and burdens accounted for the majority of the favorable variance of $107,239 due to us having budgeted for three payrolls in the month of January and only two were actually were booked.

ADMINISTRATIVE EXPENSES - We had a negative variance of $33,387 which was mostly due to the cost of the cleaning contract for McKee Run Oil Tank #2.

ENVIRONMENTAL, HEALTH, AND SAFETY EXPENSES - We had a negative variance of $12,810 due to the fuel oil tank cleaning. In this area, Non-Hazardous Waste disposal costs exceeded those originally expected.

MAINTENANCE EXPENSES - We had a positive variance of $24,905 with a large portion of that attributed to the low run time and minimal maintenance expenditures on high ticket items like the boiler and turbine.

OPERATING EXPENSES – Positive variance of $30,363 due mostly to limited run time and the variable costs associated with operating hours such as water usage and water treatment chemicals.

4.0 Operations

Month – January 2007							
		McKee Unit 1	McKee Unit 2	McKee Unit 3	MRS Facility	VanSant Unit 11	Total All Units
Capacity	MW	17	17	102	136	39	175
On Line Hours	Hrs	0	42.784	0	42.784	0	42.784
Starts	#	0	1	0	1	0	1
Gross Generation	MWh	0	307.171	0	307.171	0	307.171
Net Generation	MWh	0	285.314	0	285.314	0	285.314
Total Auxiliaries	MWh	41.80	63.657	178.468	367.524	40.438	407.962
Auxiliaries purchased	MWh	41.80	41.80	178.468	345.667	40.438	386.105
Fuel Gas Used	MMBTU	0	3,953,023	203,480*	4,156,503#*	0	4,156,503#*
Fuel Oil Used	MMBTU	0	0	0	0	0	0
Fuel Oil Used	Gallons	0	0	0	0	0	0
Total Fuel	MMBTU	0	3,953,023	203,480*	4,156,503#*	0	4,156,503#*
Net Heat Rate	BTU/KWh	NA	13,855	NA	13,855	NA	13,855
Unit Trips	#	0	0	0	0	0	0
Capacity Factor	%	0%	2.26%	0%	0.28%	0%	0.22%
Availability Factor	%	100%	100%	100%	100%	100%	100%
eFOR	%	0%	0%	0%	0%	0%	0%
HW Boiler Gas Usage	MMBTU				2,156,005		2,156,005
Pilot Gas Usage	MMBTU	0	141,105		141,105		141,105

 # Note: Does not include HWB or Pilot Gas

*** Note: Includes fuel used to heat boiler to prevent freezing.**

Fiscal Year to Date 7/1/06-6/30/07							
		McKee Unit 1	McKee Unit 2	McKee Unit 3	MRS Facility	VanSant Unit 11	Total All Units
Capacity	MW	17	17	102	136	39	175
On Line Hours	Hrs	184.134	190.018	411.608	785.760	107.120	892.880
Starts	#	6	5	21	32	31	63
Gross Generation	MWh	1,499.154	1,580.808	20,801.383	23,881.345	3,377.692	27,259.037
Net Generation	MWh	1,406.823	1,482.405	18,992.793	21,882.021	3,357.616	25,239.637
Total Auxiliaries	MWh	317.878	323.950	3,359.008	4,000.835	196.201	4,241.623
Auxiliaries purchased	MWh	225.547	225.547	1,550.418	2,001,511	176.125	2,222.223
Fuel Gas Used	MMBTU	13,478,640	17,386,555	152,716,243	183,581,439#	42,000,242	225,581,681#
Fuel Oil Used	MMBTU	8,547,961	3,177,772	84,820,428	96,546,161,	2,941,527	99,487,689
Fuel Oil Used	Gallons	57,177	21,256	565,969	644,402	21,083	661,485
Total Fuel	MMBTU	22,135,237	20,604,237	237,535,619	281,315,124#	44,941,770	325,069,370#
Net Heat Rate	BTU/KWh	15,734	13,900	12,551	12,847	13,385	12,918
Unit Trips	#	4	1	1	6	7	13
Capacity Factor	%	1.60%	1.69%	3.61%	3.12%	1.67%	2.80%
Availability Factor	%	97.12%	98.01%	99.34%	98.16%	98.94%	98.35%
eFOR	%	1.35%	4.24%	0.66%	1.20%	0.0%	0.93%
HW Boiler Gas Usage	MMBTU				11,793,134		11,793,134
Pilot Gas Usage	MMBTU	526,200	822,562		1,348,762		1,348,762

 # Note: Does not include HWB or Pilot Gas

VanSant Lifetime through 1/31/07			
	Actual Starts	Factored Starts	Fired Hours
VanSant	1148	1877.25	3,755.902
Since HGP - Dec 2004	100	209.55	342.699

CapacityTesting					
Summer 2006-2007 (June 1- Aug 31)			**Winter 2006-2007 (Dec 1- Mar 1)**		
Unit	Rated Net Capability (MW)	Reported Net Capability (MW)	Unit	Rated Net Capability (MW)	Reported Net Capability (MW)
1	17	17	1	17	17.3
2	17	17.4	2	17	17.45
3	102	102.68	3	102	105.18
VanSant	39	40.3	11	40	*
Total	175	177.38	Total	176	139.93

* Note: The plant requested that Units 1, 2, 3 & 11 be included in the Winter Cap Test Exemption Program which states that the units do not have to demonstrate capacity unless called upon to run during the December – February cap test period. Units 1, 2 & 3 ran during the month of December and completed their respective capacity test.

Historical Performance

Month	***Generation* (MWh)***	***Gas* (MMBTU)***	***Oil* (gal)***	***Availability***		***Capacity Factor***		***Starts***	
				2006	***2005***	***2006***	***2005***	***2006***	***2005***
Jul	6,102.198	74,878,054	11,238	97.12	100	4.69	18.2	27	21
Aug	8,144.843	85,343,345	73,580	99.23	100	6.26	18.6	19	27
Sep	0	0	0	93.86	99.93	0	2.29	0	4
Oct	720.739	7,869,890	8,549	100	96.34	.55	0.33	3	2
Nov	4,068.753	44,648,124	54,148	98.10	100	3.21	0.19	9	2
Dec	5,917.68	56,444,693	517,970	100	100	4.52	17.69	4	9
				2007	**2006**	**2007**	**2006**	**2007**	**2006**
Jan	285.314	4,156,503	0	100	100	0.22	0	1	1
Feb					98.87		0		6
Mar					90.99		.21		2
Apr					96.53		.01		6
May					100		.09		1
Jun					100		1.07		2
FYTD	24,954.323	179,623,911	665,485	97.68	98.55	2.96	4.99	58	83

*** Note: Total Net Generation for all four units combined**

4.1 Training

During the month of January, the Senior Operators and Operation Supervisors continued with monthly online PJM training in order to meet PJM training requirements and for further exam preparation. Auxiliary Operators have also been included in PJM training tasks and have now been officially entered into the PJM system complete with access to the on line training offered by the PJM website. The operating teams continued to train on water chemistry testing and treatment of the Hot Water Boiler System, dry startups and shutdowns of the units, and the plant air system. The teams continue to utilize their lab training by testing oil samples collected when the units operate on fuel oil.

4.2 Personnel

We continue to have an opening in the operations department due to an employee leaving the company in October to pursue other career opportunities. At the present time, plant management has decided to leave the position open and is actively adjusting the operations teams' work schedules to meet plant needs.

5.0 Maintenance

During the month of January, the plant maintenance staff continued addressing our backlog of work orders and focused on keeping all units available to our client and PJM. Sixty-seven work orders were issued during the month with a total of seventy work orders being completed.

The table below summarizes the monthly work order activities.

Work Order Report

January- 07

Priority #	Outstanding From Previous Months	Issued This Month	Completed This Month	Outstanding at the end of the month
P1	0	0	0	0
P2	0	4	4	0
P3	4	12	16	0
P4	8	32	30	10
P5	1	0	1	0
P6	0	0	0	0
P7	5	8	10	3
P8	4	7	5	6
P9	2	1	0	3
P6 - 1	0	0	0	0
P6 - 2	0	0	0	0
P6 - 3	0	2	2	0
P6 – 4	2	1	1	2
P6 – 5	0	0	0	0
P6 – 6	0	0	0	0
P6 – 7	2	0	0	2
P6 - 8	1	0	1	0
PM	10	34	31	12
Totals	29	67	70	26

Note: PM's are included in the priority totals

Notable activities during the month include:

1) During the month, annual OSHA required crane inspections were completed on the three cranes in the plant.

2) We continued to meet with plant staff in order to make preparations for the upcoming annual outages on McKee Run Unit 3 and VanSant Unit 11.

3) The plant staff performed ultrasonic testing (UT) and mapping of the reheat tubes in Unit 3 boiler and found one tube with a two inch crack and five others that warrant replacement due to thinning of the tubes. This work is currently being planned and scheduled. Replacement tube sections are in stock in the plant warehouse.

The following work orders remained open at the end of the month:

Work Order #	*Due Date*	*Brief Description of Work Order*	*Reason for Past Due*
5638	6/3/05	Replace H2 feed line in plant	The line has been prefabricated and will be installed in March 2007 outage period
5711	6/20/05	New control room CEMS view node	Computer has been dedicated, need to configure computer, expect assistance from the OEM within 60 days
6353	4/30/06	Golf cart will not charge	Work in progress – a low priority with two additional carts available
6652	10/13/06	Plan and price a smoke detector system for admin bldg and warehouse.	Work in progress. Waiting for vendor quotes for elevator addition to the quoted work.
6654	11/17/06	Steps for 006 Outfall	Plan is being developed
6655	11/17/06	Steps for 001 Outfall	Plan is being developed
6731	12/14/06	Leaking regulator on B acid pump at VanSant	Waiting on parts, on order
6772	1/11/07	#1 and#2 cooling water strainers hard to operate	Waiting on parts, on order
6818	1/29/07	Install hand railing around the hot reheat line on unit 3, 4th floor	Waiting on piping to be bent in a semi-circle by vendor

6.0 Engineering

Unit Trips/Outages/Operations

During the month of January, Unit #2 at the McKee Run Facility was self dispatched on January 2nd and 3rd to support the City of Dover Electric Department while their line crews worked on upgrades to the 69KV electrical distribution system. The line work which required plant operation to support their line upgrade efforts has now been completed.

Other Events

During the month, Bob Sansone, Mike Corbett and Christopher Fancher from XL Insurance Services, the City of Dover's insurance carrier, toured the McKee Run and VanSant facilities to provide technical support and assistance to the plant in a number of areas. Transformer Oil test results were reviewed and it was determined that no corrective actions are needed at this time. The recommendation by XL Insurance was to continue to monitor and sample the transformer oil on a regular basis as is presently set up in the plant's preventative/predictive maintenance program. In addition, thermographic test results of the Unit 1 and 2 motor control centers and plant switchyard were reviewed with XL Insurance Services. There were several hot spots identified and work orders have been written up and entered into MAXIMO, the plant's computerized maintenance management system to ensure the discrepancies are corrected in a timely manner. XL Insurance will provide a detailed report of their site visit which will also include their recommendations on plant improvements.

We proceeded to clean the McKee Run Fuel Oil Tank #2 that is now empty so that it can be assessed for either use as a holding tank for the remaining fuel in the McKee Run Fuel Oil Tank #1 or to take the tank completely out of service. We have not yet received the final report from the API 653 Inspection recently completed in early January. Once we receive the final report, the plant will submit their request for a time extension on the Out-of-Service Inspection required for McKee Run Tank #1 by June 30, 2007. We are also assessing quotes for the API 653 Inspection on the McKee Run Tank #2.

Action plans/objectives as part of the appraisal process for the coming year were mutually developed for all employees and have been finalized and were presented to them in January.

We are in the final stages of developing the Budget for the fiscal year 2007-2008. The last bit of information we need to complete the budget will not be available until January 31, 2007 at which time the budget will be submitted to Pace Global for final approval

7.0 Summary of NAES Performance to Date

Measure	*Month*		*Year to Date*	
eFOR	0.0%		0.93%	
Budget (Actual vs. Budget)	82.38%		86.87%	
Safety	0		0	
Environmental	0		0	
Capacity Tests Completed	Summer	Winter	Summer	Winter
Unit 1	No	No	Yes	Yes
Unit 2	No	No	Yes	Yes
Unit 3	No	No	Yes	Yes
Unit 11	No	No	Yes	No



An Energy Plan for Our City to:

- **Reduce Emissions**
- **Lower Energy Bills**
- **Save Taxpayer Dollars**
- **Protect our Environment**
- **Protect our Health**

In association with
Our City Council
Our Mayor' Office
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Cool CITIES

Solving Global Warming One City at a Time

sierraclub.org/coolcities

COOL CITIES TAKE THE LEAD

Communities all over America are responding to the threat of global warming with smart energy solutions. These "Cool Cities" are taking decisive action to reduce heat-trapping emissions, lower energy bills, save taxpayer dollars, and protect our environment.

At a time when the federal government is failing to act, mayors and other local leaders are taking the lead to curb global warming. Beginning with Seattle Mayor Greg Nickels, more than 200 mayors representing 42 million Americans in 38 states have signed the U.S. Mayors Climate Protection Agreement to reduce global warming carbon dioxide (CO_2) pollution in their cities to 7 percent below 1990 levels by 2012 (see **seattle.gov/mayor/climate**).

These Cool Cities are working to meet this goal with practical and innovative energy solutions that reduce energy waste and pollution, and thereby cut our dependence on oil, benefit public health, and save money.

GLOBAL WARMING: NOW IS THE TIME TO ACT

Scientists have concluded that burning fossil fuels—like oil, coal, and natural gas—to power our cars, homes, and businesses is causing global temperatures to rise. This heating of the earth poses a serious threat to our health, safety, economy, and environment.

The good news is that we have the tools today to reduce global warming pollution, and cities of all sizes are pursuing innovative energy solutions.

While every city's energy solutions plan will be unique, there are three key common Cool City strategies: **Green Vehicle Fleets, Energy Efficiency,** and **Renewable Energy**.

GREEN VEHICLE SOLUTIONS

The biggest single step we can take to curb global warming is making our cars, trucks, and SUVs go farther on a gallon of gas. Many cities are cutting their global warming emissions by purchasing gas-electric hybrid cars and SUVs for their city vehicle fleet.

By using less gasoline, hybrid vehicles release a fraction of the global warming and









air pollution emitted by conventional vehicles while saving money at the gas pump. Some cities are also providing incentives, such as free parking and lower registration fees, to encourage the purchase of hybrids by local residents and businesses.

ENERGY EFFICIENCY SOLUTIONS

Energy efficiency means using less energy through better technology to light streets and power buildings and industrial facilities. Reducing energy use is one of the most cost-effective and fastest ways to meet our energy needs. Lowering energy costs enables communities to invest more in schools, job creation, and new infrastructure.

Since fossil fuel power plants account for more than one-third of U.S. global warming emissions, saving energy also means less pollution. From high-tech interior and street lighting, energy-efficient building standards and retrofits, to efficient combined heat-and-power, cities in every region of the country are modernizing lighting, heating, cooling, and other systems.



Clean Harvest: Waverly Light & Power in Iowa has installed wind turbines on land leased from local farmers, creating clean electricity for the city and additional income for farmers.



Cool Mayor: Mayor Joseph Adams, of University City, Missouri, accepts the Sierra Club's Cool City award for signing the U.S. Mayors Climate Protection Agreement.

RENEWABLE ENERGY SOLUTIONS

Cities across the nation are investing in clean and renewable power like solar and wind energy to lower global warming emissions and create a reliable source of safe, homegrown electricity.

Many cities are adopting "renewable energy standards" that require a specific percentage of the electricity sold in a city or utility area to come from renewable sources by a specific target date.

Other cities are incorporating renewable energy technologies, such as solar photovoltaic panels, into the design of public buildings. Renewable power and energy efficiency are essential solutions for replacing electricity from dirty, fossil-fuel-burning power plants.

COOL CITIES: BRINGING COMMUNITIES TOGETHER

The most successful Cool Cities are engaging the entire community to help meet the goals of the U.S. Mayors Climate Protection Agreement. Local businesses, builders, faith groups, environmentalists, and labor unions are working together to make their cities more livable and vibrant while lowering energy bills, creating good jobs, and tackling a global problem.

RE-ENERGIZING YOUR CITY

As the news of successful city solutions spreads, more cities are joining in the Cool Cities movement to lead our country and our world into a new energy future. Cool Cities are literally re-energizing our nation, proving that we can solve global warming one city at a time.

Now it's your city's turn.

COOL CITIES

TAKE ACTION: BECOME A COOL CITY

1. Join the U.S. Mayors Climate Protection Agreement to reduce global warming pollution

2. Green your city's vehicle fleets with hybrid and other cleaner cars

3. Modernize city buildings with money-saving energy-efficiency technology

4. Invest in clean and safe renewable energy

LEARN MORE:

For a list of cities that are becoming "cool," and for resources and specific examples of smart energy city solutions and model action plans, go to **sierraclub.org/coolcities**.

ENDORSING THE U.S. MAYORS CLIMATE PROTECTION AGREEMENT

WHEREAS, the U.S. Conference of Mayors has previously adopted strong policy resolutions calling for cities, communities and the federal government to take actions to reduce global warming pollution; and

WHEREAS, the Inter-Governmental Panel on Climate Change (IPCC), the international community's most respected assemblage of scientists, has found that climate disruption is a reality and that human activities are largely responsible for increasing concentrations of global warming pollution; and

WHEREAS, recent, well-documented impacts of climate disruption include average global sea level increases of four to eight inches during the 20th century; a 40 percent decline in Arctic sea-ice thickness; and nine of the ten hottest years on record occurring in the past decade; and

WHEREAS, climate disruption of the magnitude now predicted by the scientific community will cause extremely costly disruption of human and natural systems throughout the world including: increased risk of floods or droughts; sea-level rises that interact with coastal storms to erode beaches, inundate land, and damage structures; more frequent and extreme heat waves; more frequent and greater concentrations of smog; and

WHEREAS, on February 16, 2005, the Kyoto Protocol, an international agreement to address climate disruption, went into effect in the 141 countries that have ratified it to date; 38 of those countries are now legally required to reduce greenhouse gas emissions on average 5.2 percent below 1990 levels by 2012; and

WHEREAS, the United States of America, with less than five percent of the world's population, is responsible for producing approximately 25 percent of the world's global warming pollutants; and

WHEREAS, the Kyoto Protocol emissions reduction target for the U.S. would have been 7 percent below 1990 levels by 2012; and

WHEREAS, many leading US companies that have adopted greenhouse gas reduction programs to demonstrate corporate social responsibility have also publicly expressed preference for the US to adopt precise and mandatory emissions targets and timetables as a means by which to remain competitive in the international marketplace, to mitigate financial risk and to promote sound investment decisions; and

WHEREAS, state and local governments throughout the United States are adopting emission reduction targets and programs and that this leadership is bipartisan, coming from Republican and Democratic governors and mayors alike; and

WHEREAS, many cities throughout the nation, both large and small, are reducing global warming pollutants through programs that provide economic and quality of life benefits such as reduced energy bills, green space preservation, air quality improvements, reduced traffic congestion, improved transportation choices, and economic development and job creation through energy conservation and new energy technologies; and

WHEREAS, mayors from around the nation have signed the U.S. Mayors Climate Protection Agreement which, as amended at the 73rd Annual U.S. Conference of Mayors meeting, reads:

The U.S. Mayors Climate Protection Agreement

A. We urge the federal government and state governments to enact policies and programs to meet or beat the target of reducing global warming pollution levels to 7 percent below 1990 levels by 2012, including efforts to: reduce the United States' dependence on fossil fuels and accelerate the development of clean, economical energy resources and fuel-efficient technologies such as conservation, methane recovery for energy generation, waste to energy, wind and solar energy, fuel cells, efficient motor vehicles, and biofuels;
B. We urge the U.S. Congress to pass bipartisan greenhouse gas reduction legislation that includes 1) clear timetables and emissions limits and 2) a

flexible, market-based system of tradable allowances among emitting industries; and

C. We will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution by taking actions in our own operations and communities such as:
    1. Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan.
    2. Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities;
    3. Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit;
    4. Increase the use of clean, alternative energy by, for example, investing in “green tags”, advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste to energy technology;
    5. Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting and urging employees to conserve energy and save money;
    6. Purchase only Energy Star equipment and appliances for City use;
    7. Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system;
    8. Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel;
    9. Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production;
    10. Increase recycling rates in City operations and in the community;
    11. Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO2; and

12. Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.

NOW, THEREFORE, BE IT RESOLVED that The U.S. Conference of Mayors endorses the U.S. Mayors Climate Protection Agreement as amended by the 73rd annual U.S. Conference of Mayors meeting and urges mayors from around the nation to join this effort.

BE IT FURTHER RESOLVED, The U.S. Conference of Mayors will work in conjunction with ICLEI Local Governments for Sustainability and other appropriate organizations to track progress and implementation of the U.S. Mayors Climate Protection Agreement as amended by the 73rd annual U.S. Conference of Mayors meeting.

1

Introduction to the Cool City Program.
Why it is important to become involved and case histories of cities now participating.

2

Cities are not waiting on federal action to begin work.

3

New Energy for Cities.
Solar Energy, Building Codes, Financing, and Training are all discussed in this section.

4

The cost of each program, dollars saved by the taxpayer and fuel reductions from actual city studies.

5

Public petitions asking for strong city action.

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Solving Global Warming One City at a Time







Sierra Club's Guide to Local Global Warming Solutions

Cool Cities

Cool Cities Map 3

Four Steps to Become a Cool City 4

GREEN VEHICLE SOLUTIONS 5

Charlotte, NORTH CAROLINA 6

Houston, TEXAS 6

Marion County, FLORIDA 7

Washington, D.C. 7

ENERGY EFFICIENCY SOLUTIONS 8

Salt Lake City, UTAH 9

Scottsdale, ARIZONA 9

Twin Falls, IDAHO 10

St. Paul, MINNESOTA 10

RENEWABLE ENERGY SOLUTIONS 11

Fort Collins, COLORADO 12

Columbia, MISSOURI 12

Waverly, IOWA 13

CONCLUSION & TAKE ACTION 14

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COVER PAGE PHOTOS:

1. Skyline of Chicago, one of the more than 200 cities that have pledged to reduce local heat-trapping pollution. PHOTO BY ROBERT GLUSIC

2. Iowa's Waverly Light & Power is the first municipal utility to install its own wind turbines. PHOTO BY WAVERLY LIGHT & POWER

3. Investing in clean energy not only saves taxpayer dollars and protects the environment, it also creates good jobs for the future. PHOTO BY APOLLO ALLIANCE

4. The Western Area Power Administration's 4-kilowatt photovoltaic array at its Rocky Mountain Customer Service Center building east of Loveland, Colorado. PHOTO BY WESTERN AREA POWER ADMINISTRATION

You can find this guide and more information about our Cool Cities campaign at **sierraclub.org/coolcities**

The Sierra Club's members are 750,000 of your friends and neighbors. Inspired by nature, we work together to protect our communities and the planet. The Sierra Club is America's oldest, largest and most influential grassroots environmental organization.

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Cool CITIES

Solving Global Warming One City at a Time





WAVERLY POWER AND LIGHT



DAVID WASSERMAN



SALT LAKE CITY

INTRODUCTION—

Re-Energizing Our Cities

All over America, cities, counties and states are launching an exciting grassroots movement to help solve one of our country's most pressing problems: global warming. Frustrated by stalling on the federal level, local leaders are moving forward with innovative energy solutions that cut our dependence on oil, benefit public health, and save taxpayer dollars. These mayors, county commissioners, and governors are leading the way toward a safer and more secure future.

The purpose of this guide is to provide a resource for citizens and local officials who are ready to take real action to reduce energy waste and heat-trapping global warming pollution in their communities. In the following pages, you will find inspiring city success stories from a broad range of cities, from larger metropolitan centers such as Salt Lake City, St. Paul, and Charlotte to smaller cities like Twin Falls, Idaho, and Waverly, Iowa.

The strategies that these and other Cool Cities are pursuing fall under three categories: **Cleaner Vehicles, Energy Efficiency, and Renewable Energy.** Every one of these local solutions is already saving taxpayer dollars and improving public health by reducing energy waste and pollution. By taking innovative actions, forward-looking cities are re-energizing our nation, proving that we can solve global warming one city at a time.

Every one of these local solutions is already saving taxpayer dollars and improving public health by reducing energy waste and pollution.

GLOBAL WARMING—

The Time to Act Is Now

The scientific community has concluded that burning fossil fuels—oil, coal, and natural gas—to power our cars, homes and businesses is causing global temperatures to rise. This heating of the earth poses a serious threat to our health, safety, and environment.

The national science academies of the United States, England, France, Russia, Germany, Japan, Italy, Canada, Brazil, China and India issued the following joint declaration in June 2005: "The scientific understanding of climate change is now sufficiently clear to justify nations taking prompt action." The world's leading scientists ask us to "recognize that delayed action will increase the risk of adverse environmental effects and will likely incur a greater cost." [Source: "Joint Science Academies' Statement: Global Response to Climate Change," June 2005—royalsoc.ac.uk/document.asp?id=3222]

GEO-HEAT CENTER/NREL



KATRIN SCHOLZ-BARTH/NREL



Keeping Warm, Keeping Cool—In Klamath Falls, Oregon, a geothermal district heating system keeps the sidewalks clear and dry at the Basin Transit station. The 22,000 square-foot garden on the "green" roof of Chicago's city hall cools the building during the city's hot summers.

Cities Take the Lead

The good news is our cities have not become paralyzed by the threat of global climate change. Instead, they are taking the lead with the "U.S. Mayors Climate Protection Agreement" initiated by Seattle Mayor Greg Nickels. Introduced on February 16, 2005—the same day that the Kyoto Protocol international global warming treaty took effect in 141 nations—the agreement is gathering support around the country and has earned the backing of the U.S. Conference of Mayors. To date, more than 200 mayors representing more than 42 million Americans in 38 states have signed on, pledging to reduce global warming carbon dioxide (CO_2) pollution citywide to 7 percent below 1990 levels by 2012. [Go to **seattle.gov/mayor/climate** for more information on the mayors' climate protection agreement.]

How will these cities accomplish these ambitious goals in the next seven years? And how can your city become a Cool City?

Seattle: Cool City Model

The city of Seattle is on the forefront of global warming local solutions. Under Mayor Greg Nickels' leadership, the city government has already reduced its own global warming pollution by more than 60 percent by constructing green buildings and operating alternative fuel vehicles. Seattle City Light is the only electric utility in the country producing zero net greenhouse gas emissions, and the city is working to expand transportation choices, recycling, and urban forest restoration.

Mayor Nickels has also created a Green Ribbon Commission on Climate Protection, composed of business, environmental, government, community, and labor leaders. The Commission is developing a plan for Seattle to meet its global warming pollution reduction targets, and identifying key economic opportunities for Seattle's transition to a clean energy future.

"By making smart choices like building sustainable buildings, replacing old vehicles with a 'Clean and Green' fleet, and setting strict 'no-net-emissions' goals for Seattle City Light, the City has shown we can take local action on global problems," said Mayor Nickels.

LEARN MORE

To find out about Seattle's Climate Initiative, see **ci.seattle.wa.us/environment/climateinitiative.html**

Cool Cities Across America



As of February 27, 2006, 208 mayors from 38 states representing more than 42 million Americans have pledged to reduce global warming carbon pollution in their cities to 7 percent below 1990 levels by 2012.

"With the passage of significant international accords and adoption of this statement by U.S. mayors, we have hope that the global community can successfully join together, as nations did to solve the problem of ozone depletion, to prevent the most devastating consequences of global climate change."

—Salt Lake City Mayor Rocky Anderson

PUTTING GLOBAL WARMING SOLUTIONS INTO ACTION

Four Steps to Become a Cool City

Getting your city to become part of the fight against global warming is as simple as the four steps outlined below. These steps are modeled on the Cities for Climate Protection program, a successful initiative run by the International Council for Local Environmental Initiatives (ICLEI) to help cities reduce global warming pollution. Encouraging your city to join ICLEI's Cities for Climate Protection program is an excellent way to fulfill the Cool Cities pledge. But any city can start making a difference by putting existing smart energy solutions to work today.

Visit **iclei.org** for more information on the Cities for Climate Protection program.

Step 1: Take the "Cool Cities" Pledge

The first step towards curbing global warming pollution in your community is to ask your mayor to sign the U.S. Mayors Climate Protection Agreement. This agreement sets the goal of reducing citywide global warming carbon dioxide (CO_2) pollution to 7 percent below 1990 levels by 2012. See **seattle.gov/mayor/climate**

Step 2: Conduct a Global Warming Emissions Inventory

The next step is to conduct an inventory of your city's current global warming emissions. This information will identify the city's major CO_2 sources (and the greatest opportunities for reductions), and will provide a baseline to judge the city's progress towards its goal. Cities can receive technical assistance to conduct a global warming emissions inventory from a variety of sources including state and federal agencies as well as ICLEI through its Cities for Climate Protection program.

Step 3: Create a Solutions Plan

After completing its global warming inventory, your city will be ready to develop a solutions plan that can reduce emissions while lowering energy costs for the city. While every city's energy solutions plan will be unique, there are three important strategies: **Green Vehicle Fleets, Energy Efficiency,** and **Renewable Energy.** In some combination, these solutions, which are illustrated with specific success stories later in this guide, will form the foundation of your city's comprehensive energy-saving plan.

For examples of Cool City Solutions Plans, visit **sierraclub.org/coolcities**



"Minneapolis has set high standards for CO_2 reduction and we're meeting them—a strategy that has earned our city tremendous environmental and economic benefits. Climate disruption is a global problem but we feel the effects locally. We are thrilled with Seattle and Mayor Greg Nickels' initiative and will work hard to challenge our nation through our example."

—Minneapolis Mayor R.T. Rybak, in front of his hybrid car

Step 4: Implement and Monitor Progress

Of course, a plan alone cannot cut global warming pollution. It is essential that your city put the plan into action and monitor its progress periodically. With a strong commitment, a sound plan, and real action, your city will be on its way toward meeting the goals of the U.S. Mayors Climate Protection Agreement.

With a strong commitment, a sound plan, and real action, your city will be on its way toward meeting the goals of the U.S. Mayors Climate Protection Agreement.

Green Vehicle Solutions

The technology exists today to significantly reduce global warming pollution from America's cars, trucks, and SUVs. Improving automobile fuel economy is the biggest single step to curbing global warming, since every gallon of gasoline burned creates 28 pounds of heat-trapping carbon dioxide pollution. [Source: Oak Ridge National Laboratory: U.S. Department of Energy.]

Because transportation is a major source of global warming pollution, numerous cities are incorporating gas-electric hybrid vehicles and other fuel-efficient vehicles into their fleets. By using less gasoline, hybrid vehicles release a fraction of the global warming pollution emitted by conventional vehicles while saving money at the gas pump. Cities are also switching away from polluting diesel city and school buses to cleaner alternatives like compressed natural gas (CNG) powered vehicles.

Solution #1—Green Fleets

Governments of all sizes regularly purchase automobiles to help provide a wide range of taxpayer services. Recognizing an opportunity for action, many cities, counties, and states are saving taxpayer dollars and reducing air pollution by "greening" their fleets with hybrid gas-electric and other vehicles that go farther on a gallon of gas.

Currently, 48 U.S. towns and cities in 36 states have green fleets programs, as do 26 county and 17 state governments. From police departments and school districts to administrative agencies and taxi services, green fleets are a winning city solution. [Source: **greenfleets.org**]

For a general overview and step-by-step advice for writing a green fleets ordinance in your city, go to **greenfleets.org/stepone.html**

For a model green fleets ordinance, see the city of Denver's ordinance at **www.greenfleets.org/denverrevised.html**

Solution #2—Hybrid Vehicle Incentives

In addition to purchasing hybrid vehicles for city fleets, local governments can encourage citizens and businesses to buy hybrid vehicles with a wide range of incentives. Some cities are already providing incentives such as free parking for hybrid vehicles and lower registration fees and taxes.

Solution #3—Clean Buses

City residents have long had to endure the sight and smell of black smoke belching from dirty diesel-engine buses. Now many cities are replacing these polluting old buses with buses that run on cleaner compressed natural gas (CNG) or with hybrid-electric diesel engines.

"Increasingly, cities are providing the answers to some of America's toughest problems. So it's fitting that we're leading the way on global warming as well."

—Madison, Wisconsin, Mayor Dave Cieslewicz

NOTE: You can find all links referenced in this report at **sierraclub.org/coolcities.**

COOL CITIES

Houston TEXAS

In April 2005, Bill White, the mayor of the nation's 4th largest city, announced plans to convert a substantial portion of the city of Houston's fleet of cars, pickup trucks, and sport utility vehicles to hybrids by the year 2010. The city estimates that 80 percent of all new vehicle purchases and over 50 percent of the city's fleet could be hybrid vehicles by the year 2010.



Gentlemen, Start Your Hybrid Engines—Houston Mayor Bill White announces the greening of his city's fleet.

Considering the size of the city's light duty fleet (more than 3,500), Houston's investment in hybrids will pay big dividends down the road. Over its projected five-year life-cycle, the Toyota Prius hybrid should provide net savings of almost $1,900, in comparison to a conventional gasoline-only full-sized sedan, according to a city of Houston study.

Because hybrids are so fuel efficient, they release a fraction of the global warming pollution emitted by conventional vehicles. Over the lifetime of the vehicle, a hybrid Toyota Prius will release 43 fewer tons of global warming pollution compared to an average sedan.

"This makes economic sense, it makes environmental sense and it is going to set an example," said Mayor White. "We're going to save on fuel costs and we're going to help save our air quality."

LEARN MORE

Details on the city of Houston's greenfleets program are available at:
houstontx.gov/mayor/press/20050408.html

Charlotte NORTH CAROLINA

When Charlotte's fleet managers found that hybrid gas-electric vehicles are less expensive to operate than conventional cars, Mayor Pat McCrory and Council members Susan Burgess and John Tabor took action. Working with city staff and with the cooperation of Mecklenburg County, the City Council supported a plan to bring the total number of hybrids in the fleet to over two dozen by the end of 2006—more than tripling the city/county's current number of hybrids.



Although they typically cost more initially than standard gasoline-fueled cars, gas-sipping hybrids save on gasoline, have lower maintenance costs, and retain a higher resale value at the end of their useful life, according to Charlotte's Fleet Environmental Analyst David Friday.

Mr. Friday estimates that switching from a gas-only Ford Taurus to a hybrid Toyota Prius or Honda Civic would save city taxpayers approximately $800-$1200 annually per vehicle, including over $400 in annual fuel costs.

"This results in a payback of the extra purchase cost within 2.5 to 5.5 years, depending on the model chosen and miles driven," said Friday. [Source: "Ford Taurus to Honda Civic Hybrid and Toyota Prius Comparative Analysis," David Friday, Charlotte Fleet Environmental Analyst, May 2005]

LEARN MORE

Charlotte's Fleet Environmental Analyst David Friday can be reached at
dfriday@ci.charlotte.nc.us.

COOL CITIES

Marion County FLORIDA

When gas-electric hybrid vehicles hit the market, Wyatt Earp, Director of Fleet Management for the Marion County Sheriff's Office in Florida, did some cost analysis to see whether it would be a good idea to pay a little more up front for a car that gets superior mileage. The answer?

"It costs a little more to start with, but operating expenses are less," says Earp. "Plus, we're working for the environment and showing people that we don't need to be so dependent on foreign oil."

The Toyota Prius vehicles are used by the department to deliver subpoenas, transfer prisoners, and run administrative errands. In addition, trained civilians use one of the hybrids to cruise the county checking out bridges, pipelines, and other potential terrorist targets as part of the department's "Homeland Security Patrol".

"We work to conserve as much energy as we can—that's our obligation to the American people," said Earp, a descendent of the legendary frontier lawman. "We spend taxpayers' money wisely, and that means we don't run experiments. We've got a good car here. Hopefully American car companies will offer something similar, soon."

Earp also manages the annual procurement of cars for the Florida Sheriff's Association, which negotiates wholesale rates for about 5,000 city and county agencies. Last year it bought 100 hybrids. "Now the word is getting around. I think we'll have 10 times more orders than we had last year," Earp says.

LEARN MORE
Visit the Marion County Public Affairs department's Web site at:
marioncountyfl.org



You Have the Right to Get Good Mileage—For Wyatt Earp, director of fleet management for Marion County Sheriff's Department in Florida, purchasing fuel-efficient hybrid vehicles and reducing dependence on oil make sense for the environment—and the county budget.

Washington D.C .

The millions of visitors who visit our nation's capitol each year to see the monuments and museums can breathe easier because of the city's clean, natural gas buses which improve air quality and cut global warming pollution.



MARK WENZLER

Over the past four years, the Washington Metropolitan Area Transit Authority has replaced 414 of its polluting diesel buses with cleaner burning, compressed natural gas buses. Every natural gas bus replaces the need for nearly 10,000 gallons of diesel fuel each year. Since natural gas buses release 25 percent less global warming emissions than diesel, these cleaner buses result in real cuts in global warming pollution.

Natural gas buses also help to reduce smog. Compared to traditional diesel buses, the city's natural gas buses release over 50 percent less smog-forming nitrogen oxides and 85 percent less soot pollution.

LEARN MORE
Visit the Washington's transit authority Web site at:
wmata.com/about/met_news/pressroom/archived_releases/pr_cng.cfm

Energy Efficiency Solutions

Energy efficiency means using less energy through better technology to power buildings, light streets, and industry. Reducing energy use is one of the most cost-effective and fastest ways to save energy and reduce global warming pollution.

Every city can make substantial energy efficiency improvements by putting policies in place to promote efficient technologies and integrating them into planning decisions. The policies outlined below represent some of the most effective steps currently being taken on the city and local level.

Solution #1—Making New Buildings More Energy Efficient

Incorporating energy efficiency requirements into municipal building codes increases the overall energy efficiency of new buildings. Many cities have chosen to adopt the Leadership in Energy and Environmental Design (LEED) standards created by the United States Green Building Council (usgbc.org). LEED standards provide energy efficient design guidelines for a variety of building types and developments.

Solution #2—Energy Efficiency Retrofits to Existing Buildings

In addition to improving the energy efficiency of new buildings, cities can make substantial energy efficiency improvements to existing buildings. Modernizing lighting, heating, cooling, and other operations can reduce the energy requirements of existing buildings in a cost-effective manner, lowering energy costs and reducing pollution.

The U.S. Green Building Council has also developed LEED standards for existing buildings. The standards provide guidance on improving the energy efficiency of building operations and other systems without making major changes to the interior and exterior of the building. Cities around the country have made major strides in improving the energy efficiency of police and fire stations, city office buildings, and schools.

Solution #3—Energy Efficient Street Lighting

Street lighting and traffic signals can use a significant amount of energy. By replacing traditional light fixtures with super-efficient light emitting diode (LED) bulbs, cities are reaping energy and cost savings.

Solution #4—Public Benefit Funds

Cities with community-owned, local municipal utilities can integrate energy efficiency into the city's overall energy plan. If your city has a municipal utility, it can set up a local Public Benefits Fund (PBF), where a small surcharge on consumer energy bills is used to create a fund to finance energy efficiency projects in the utility service area, thus lowering the overall energy costs for consumers.

Austin Energy (austinenergy.com) and the Sacramento Municipal Utility District (smud.org) are examples of municipal utilities that have used public benefit funds to lower energy use and costs through energy efficiency.

Solution #5—Combined Heat and Power

Cities and businesses can also benefit from energy efficient combined heat and power (CHP) systems. These systems produce both electricity and steam for heating and cooling from a single power plant located near consumers. As a result, CHP systems recover heat that is normally wasted at power plants and funnel the heat into surrounding buildings. This reduces energy costs and lowers pollution by eliminating the need for separate fuel sources for electricity and heating.

"The International Panel on Climate Change has warned that New Orleans is the North American city most vulnerable to the effects of climate change. The rise of the Earth's temperature, causing sea level increases that could add up to one foot over the next 30 years, threatens the very existence of New Orleans. We will continue to collaborate and support efforts on global warming."

—New Orleans Mayor C. Ray Nagin

COOL CITIES

Salt Lake City UTAH

Salt Lake City has dramatically reduced its energy costs by aggressively pursuing energy efficiency measures. Currently, the city saves over $32,000 a year on its energy costs as a result of installing 861 light emitting diode (LED) traffic signals. The city plans to expand this program to all of its 1630 red and green lights, which is expected to save over 500 tons of heat-trapping carbon dioxide (CO_2) pollution each year with annual cost savings of $53,000. The city has also found that LED signals require less maintenance than conventional lighting.

SALT LAKE CITY



In addition, the city has replaced the conventional incandescent bulbs in its city and county office buildings with more energy efficient compact fluorescent bulbs (CFLs). These bulbs use much less energy and last significantly longer, saving the city over $33,000 a year and reducing CO_2 emissions by 344 tons per year.

These energy efficiency measures are a part of a city wide action plan to protect the environment and reduce global warming emissions.

LEARN MORE
Read Salt Lake City's plan at slcgov.com/environment/actionplan.htm

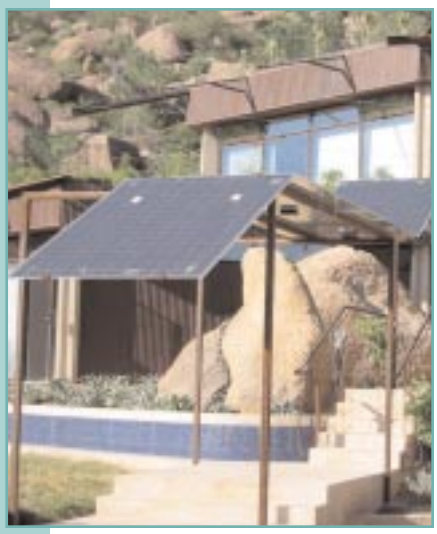
Scottsdale ARIZONA

The city of Scottsdale has been a leader in the Southwest on energy efficiency for buildings. In 1998, Scottsdale introduced Arizona's first green building program which helps builders and home owners learn about how to integrate energy efficiency and water saving features into new homes. Between 1998 and 2003, the green building program worked with 99 builders and issued 230 permits for green building projects in the city.



In March 2005, Scottsdale became the first city in the nation to require that all new city buildings and renovation projects meet LEED GOLD standards for energy efficiency and sustainability – one of the highest LEED ratings.

LEARN MORE
Read about Scottsdale's green building program at scottsdaleaz.gov/greenbuilding



Harnessing the Desert Sun— New energy-efficient homes in Scottsdale use both renewable technologies like solar panels, as well as thick adobe walls that cool the house in the summer and keep it warmer in the winter.

COOL CITIES

Twin Falls IDAHO

Like many other school districts around the country with growing numbers of students and decreasing budgets, the Twin Falls school district began searching for creative ways to reduce costs. School officials realized that the district could reduce energy costs and cut pollution by increasing the energy efficiency of its 11 schools. The upgrades included more efficient lighting and improvements to the heating, ventilation, and air-conditioning systems. The upgrades are expected to generate $3.5 million in energy savings.

In an innovative financing agreement, the school district signed an energy savings performance contract with Minnesota-based Honeywell Corporation. Under a performance contract, a private company pays to make energy efficient improvements and is then reimbursed with the money saved through lower energy bills over the lifetime of the project.

According to Dr. John Miller, the Director of Operations for the Twin Falls School District, the performance contract gave the school district "the capital to accomplish in months, what would have normally taken us a decade to complete because of budget constraints."

LEARN MORE
The Twin Falls school district project Web site is available at
newsite.schoolfacilities.com/cd_1695.aspx

St. Paul MINNESOTA

During the long, cold Minnesota winters, the majority of the buildings in downtown Saint Paul stay warm using District Energy's energy-efficient combined heat and power (CHP) system. Providing electricity to the grid and heating service to more than 80 percent of downtown Saint Paul and adjacent areas, including the Minnesota State Capitol and nearly 300 homes, the system uses heat drawn from a biomass-fired power plant located in the heart of the city.

By using a renewable resource as its primary fuel and by capturing ambient heat that would otherwise have been wasted, St. Paul's CHP system reduces overall energy consumption, costs, and pollution.

LEARN MORE
Details of Saint Paul's CHP system are available at
districtenergy.com/currentactivities/chp.html



DISTRICT ENERGY ST. PAUL

Heat and Power—
By producing both heat and electricity from one power plant, the District Energy plant helps save money and cut pollution.

Renewable Energy Solutions

By harnessing natural sources of energy like the sun and the wind, renewable energy sources can replace our reliance on outdated, polluting power plants that rely on fossil fuels. Today's solar panels efficiently transform sunlight into electricity while blending into the design of homes and office buildings. Modern wind turbines rise high above the ground, capturing the strongest winds to produce reliable electricity.

Currently, dirty fossil fuel power plants account for over a third of the nation's total global warming emissions. Meeting our energy needs with clean, renewable energy can move the country towards a brighter, cleaner, and cheaper energy future.

Cities around the country are discovering that investing in innovative renewable energy sources reduces global warming pollution and creates a reliable source of clean, homegrown electricity.

Solution #1—Renewable Energy Standards

A renewable energy standard requires an increase in the percentage of electricity from clean, renewable energy sources (such as wind and solar power) in a city or utility area by a specific target date. These standards are phased in over time so that renewable energy capacity can be built and incorporated into the necessary energy management and reliability plans. For instance, a 20 percent Renewable Energy Standard could be phased in over ten years, requiring an additional 2 percent of electricity generation to come from renewable sources each year. Cities that operate municipal utilities have been able to set renewable energy standards for their community-owned utilities.

Solution #2—Solar and Wind Installations

Some cities are moving forward by financing the construction of renewable energy projects themselves. In some cases, cities are working with local municipal utilities to construct wind turbines. In other cases, cities are working with privately owned utilities and renewable energy developers to construct solar arrays on city buildings, schools, and homes.

Solution #3—City Utility Contracts

Some cities are incorporating renewable energy requirements into their contract renewals with privately owned local utilities. For example, Denver, Colorado is working with its local utility, Xcel Energy, to establish modest renewable energy goals as part of the city's contract.



APOLLO ALLIANCE



ASCENSION TECHNOLOGY, INC./NREL

Clean Energy, Good Jobs—Clean energy investments not only save taxpayer dollars and protect the environment, they also create good jobs for the future. One example is the rooftop solar panels powering Northeastern University's Eli Student Center in Boston.

COOL CITIES

Fort Collins COLORADO



Sitting along the eastern edge of the Rocky Mountain Front, the city of Fort Collins has embraced renewable energy and energy efficiency as key components to meet the city's energy needs. In 2003, the City Council adopted the Electric Energy Supply Policy which aims to "maintain high system reliability, maintain competitive electric rates, and reduce the environmental impact of electricity generation."

This program sets strong clean energy targets, and is working to produce 15 percent of the city's electricity with renewable energy by 2017 and reduce per capita energy consumption 10 percent by 2012. Over the full time frame of the program, Fort Collins expects to reduce its global warming carbon dioxide emissions by 472,000 tons.

Clean energy is not only reducing global warming emissions in Fort Collins, but it is also saving money by reducing costs. According to the city's municipal utility, the cost of meeting energy needs through energy efficiency is about 1.7 cents per kWh, while the cost of providing energy is about 3.7 cents per kWh. That means that in Fort Collins energy efficiency is meeting citizens' needs at half the cost of energy coming from existing power plants.

According to Michael B. Smith, Fort Collins' Utilities General Manager, "We are pleased that some of our future energy growth will come from renewable energy sources. The Electric Energy Supply Policy is a positive blueprint for the future."

Funding for the city's efficiency and renewable energy programs comes from a 2 percent increase in customer rates. Even with these increases, Fort Collins continues to enjoy electricity rates below the state average, and will see lower energy costs as a result of the energy efficiency programs.

LEARN MORE
Read Fort Collins' Electric Energy Supply Policy at
ci.fort-collins.co.us/utilities/energypolicy.php

Columbia MISSOURI

Last year, with 78 percent of the vote, the citizens of Columbia, Missouri overwhelmingly approved a plan to require the city to increase its use of renewable energy sources, like wind and solar power, over the next 20 years. The measure will create a Renewable Energy Standard that requires that the city's municipal utility obtain 2 percent of its power from renewable energy by 2007, ramping up to 15 percent by 2022.

Columbia's successful ballot initiative is part of a growing national trend of voter-driven policies to increase the use of clean, renewable energy sources. Voters in Colorado recently approved a statewide Renewable Energy Standard that requires utilities in the state to produce 10 percent of their electricity with clean energy sources like wind and solar power by 2015.

LEARN MORE
Additional information about Columbia's renewal energy standard is available at
dsireusa.org/documents/Incentives/MO04R.htm

COOL CITIES

Waverly IOWA

Wind energy is not only generating pollution-free energy to the town of Waverly, but it is also providing local economic development. As the first municipal utility in the United States to install its own wind turbines, Waverly Light & Power serves 4,300 customers in a 33 square-mile area. The utility has constructed wind turbines on land leased from local farmers, creating electricity for the city and additional income for the farmers.

Waverly Light & Power's Board of Trustees has set a goal of increasing wind production to 10 percent of the total local power supply, and is advancing quite well towards that target. Currently, the city's wind turbines generate 5.52 percent of the area's total electricity generation, and provide enough electricity to meet the needs of 761 homes each year. That translates into a reduction of carbon dioxide emissions by nearly 6,850 tons per year.

LEARN MORE
Read more on Waverly Light & Power's Web site at **waverlyia.com**



WAVERLY LIGHT & POWER


WAVERLY LIGHT & POWER

"This is not only an environmental protection issue, but also an economic development and sustainability issue. Protecting our environment, we are protecting our resources and preserving them for future generations to come."

—Hallandale Beach, Florida, Mayor Joy Cooper

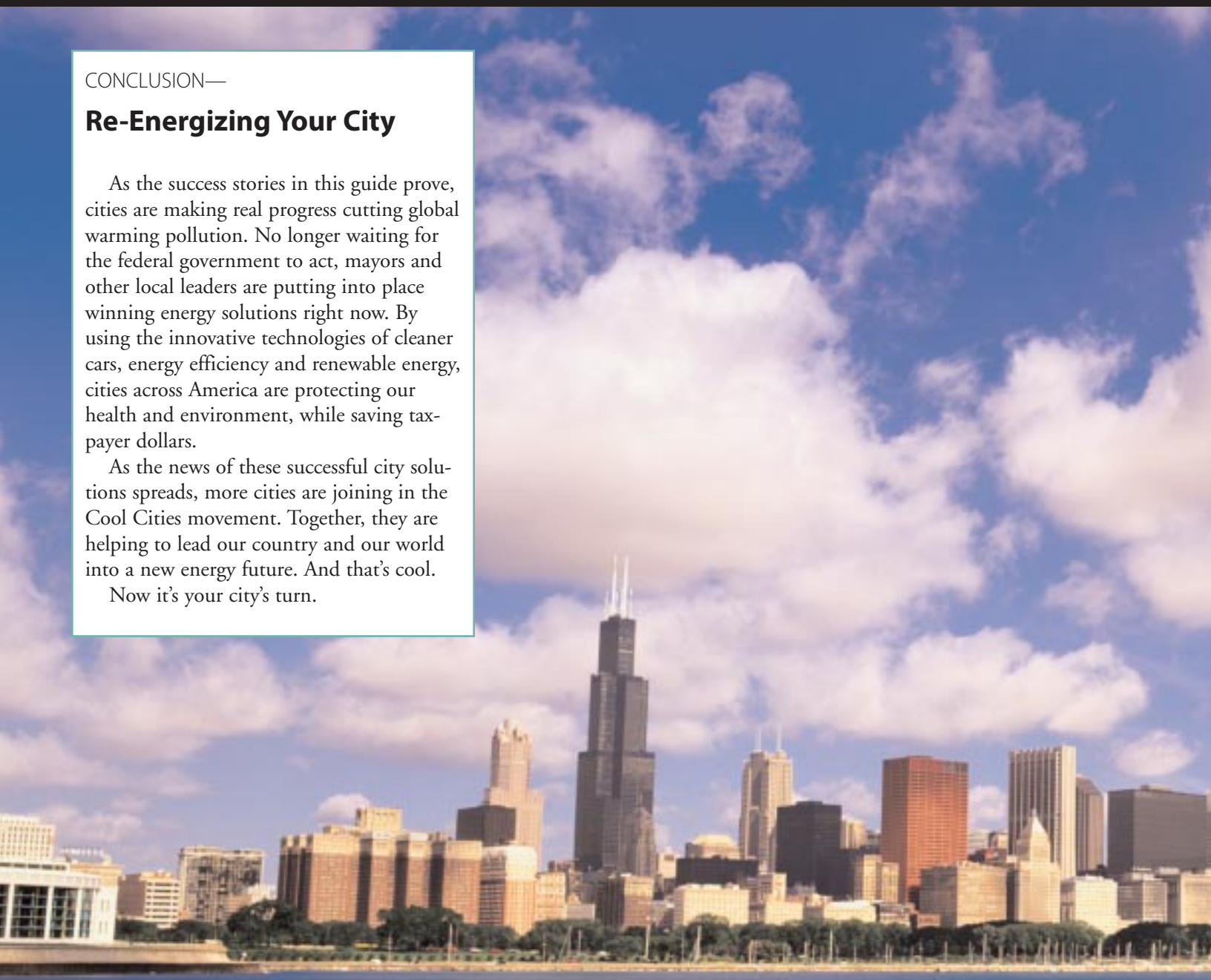
CONCLUSION—

Re-Energizing Your City

As the success stories in this guide prove, cities are making real progress cutting global warming pollution. No longer waiting for the federal government to act, mayors and other local leaders are putting into place winning energy solutions right now. By using the innovative technologies of cleaner cars, energy efficiency and renewable energy, cities across America are protecting our health and environment, while saving taxpayer dollars.

As the news of these successful city solutions spreads, more cities are joining in the Cool Cities movement. Together, they are helping to lead our country and our world into a new energy future. And that's cool.

Now it's your city's turn.



LEARN MORE: sierraclub.org/coolcities

TAKE ACTION:

1. Join the U.S. Mayors Climate Protection Agreement to reduce global warming pollution
2. Green your city's vehicle fleets with hybrid and other cleaner cars
3. Modernize city buildings with money-saving energy efficiency technology
4. Invest in clean and safe, renewable energy

Cities, States Aren't Waiting For U.S. Action on Climate

By Juliet Eilperin
Washington Post Staff Writer
Friday, August 11, 2006; A01

With Washington lawmakers deadlocked on how best to curb global warming, state and local officials across the country are adopting ambitious policies and forming international alliances aimed at reducing greenhouse gases.

The initiatives, which include demands that utilities generate some of their energy using renewable sources and mandates for a reduction in emissions from motor vehicles, have emboldened clean-air advocates who hope they will form the basis for broader national action. But in the meantime, some businesses say the local and state actions are creating a patchwork of regulations that they must contend with.

This flurry of action is part of a growing movement among state and local leaders who have given up hope that Congress and the administration will tackle major issues, and are launching their own initiatives on immigration, stem cell research and energy policy. Last week alone, former president Bill Clinton launched an effort with 22 of the world's largest cities to cut their emissions, while California Gov. Arnold Schwarzenegger (R) and British Prime Minister Tony Blair said they will explore trading carbon dioxide pollution credits across the Atlantic.

Recently, 22 states and the District of Columbia have set standards demanding that utilities generate a specific amount of energy -- in some cases, as high as 33 percent -- from renewable sources by 2020. And 11 states have set goals to reduce greenhouse gas emissions by as much as 80 percent below 1990 levels by 2050.

California also has passed legislation mandating that automakers reduce their vehicles' carbon dioxide emissions 30 percent by 2016, and 10 other states have committed to adopt the same standards if the law survives a court challenge.

In addition, as many as 10 states in the Northeast are working to establish state-by-state ceilings for carbon dioxide and other greenhouse gases, and allow industries such as power plants to trade pollution credits for carbon emissions while cutting greenhouse gas emissions 10 percent by 2019. California, Oregon and Washington are negotiating a similar pact.

Some local officials said they are pushing ahead with plans because the Bush administration, which has promoted cleaner technology but opposes mandatory curbs on greenhouse gas emissions, has failed to adequately address the problem.

"Like most mayors, I'm disappointed the federal government has not taken more of a lead on this issue, but so be it. We're moving forward," said Albuquerque Mayor Martin J. Chavez, who is expanding public transportation in his city and has persuaded some other U.S. mayors to pledge to make their cities' buildings carbon-neutral by 2030, meaning their net carbon dioxide emissions would be zero.

But some experts say there is a political imperative at work, as well. Tim Profeta, who worked for Sen. Joseph I. Lieberman (D-Conn.) before leaving last year to direct Duke University's Nicholas Institute for Environmental Policy Solutions, said local politicians feel greater pressure to address the threat of rising sea levels and other climate-related conditions.

"State and local governments are less removed from their constituents, so they're more responsive to voters' concerns," said Profeta, who sits on North Carolina's climate-change commission and has met with British officials on the subject. "Climate change is on people's minds, and they're asking for action."

North Carolina state Sen. Charles W. Albertson (D) said he is not "completely convinced" that human activity is causing global warming, but he pushed for the climate-change commission because he worries that environmental changes are threatening his coastal constituents' homes and livelihoods. "What if it's taking place and we're not doing anything about it?" he asked.

Bush's top environmental adviser, James L. Connaughton, said the president welcomes state and local initiatives because they complement the administration's approach to global warming.

"They're pursuing a portfolio of policies, not a one-size-fits-all policy," Connaughton said in an interview Aug. 4, adding that the United States is also focused on voluntary pacts such as China's pledge to improve its power production efficiency 20 percent by 2010. "At the end of the day, what matters is performance, and we're all making about the same rate of progress."

Some state officials and environmentalists said their efforts will soon surpass anything Bush has done to combat climate change.

Richard Cowart, who has advised officials on both coasts on carbon-trading systems as a director of the Vermont-based Regulatory Assistance Project, said that together, the two proposed trading systems "represent one of the largest efforts to rein in carbon emissions in the world."

And Dan Becker, global warming director for the Sierra Club, said auto manufacturers will cut emissions now that states representing a third of the country's market are preparing to regulate carbon dioxide.

"Obviously, what we're trying to do is reach a tipping point," Becker said. "We're probably close to where the car companies will have to cry 'uncle.' "

The automakers are suing to block California's law, however, and the Bush administration may block it on the grounds that it amounts to usurping the federal government's right to set national fuel economy standards.

Margo Thorning, senior vice president of the American Council for Capital Formation, said this array of state regulations could harm the U.S. economy.

"I don't think it's terribly helpful to have the industry wondering what are the car standards in California vis-a-vis the standards in Arizona," said Thorning, whose think tank is funded in part by Exxon Mobil Corp. "It adds a lot of uncertainty and slows the kind of investment we'd like to see in the U.S."

These overlapping carbon dioxide regulations may force the administration's hand. Robert E. Busch, PSEG Services Corp. president, said during a Washington panel discussion in February that "you sort of don't blame" environmentalists for pursuing state caps on carbon dioxide, but added, "The answer to this problem is not 50 different approaches to greenhouse gases in the United States. That makes no sense at all."

And Richard J. Osborne, vice president of public and regulatory policy at Duke Energy Corp., told a Duke University audience in September that his utility backed federal legislation on climate change because the "patchwork of state actions" might produce "state-by-state chaos."

Clinton, who is establishing an international consortium so cities from Cairo to Los Angeles can bargain for energy-efficient products and trade policy ideas, said state and local experiments could eventually form the basis for federal action on climate change.

"What we need to do is get more case studies," Clinton said in an interview last week, adding that while voters care more about global warming now than when he was president, as for candidates, "unfortunately, it's not one of those issues where if you don't do something about it, you'll get beat."

Some federal officials are participating in the emerging carbon-trading economy: Sen. Richard G. Lugar (R-Ind.) has registered his farm's hardwood trees on the Chicago Climate Exchange, calculating that the 3,440 tons of carbon dioxide absorbed by the trees will trade for more than $15,000.

Matt Petersen, president of the advocacy group Global Green USA, said that over the past decade, he has found state and local officials to be more open to imposing energy

efficiency standards on commercial buildings and to renewable-energy tax credits. Global Green is advising West Hollywood officials on drafting green building standards for new private construction and is lobbying the Louisiana government to give developers an incentive to rebuild New Orleans in an energy-efficient way.

"We had to do a lot of work and hand-holding early on," Petersen said. "The people who asked the toughest questions are now the biggest advocates."

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The Apollo Alliance for Good Jobs and Clean Energy

The Apollo Alliance provides a message of optimism and hope, framed around rejuvenating our nation's economy by creating the next generation of American industrial jobs and treating clean energy as an economic and security mandate to rebuild America. America needs to hope again, to dream again, to think big, and to be called to the best of our potential by tapping the optimism and can-do spirit that is embedded in our nation's history.

In 1961, John F. Kennedy challenged the nation to send a man to the moon and return him safely home again within the decade. It was an audacious dare. The technology did not yet exist, but he marshaled the resources of a nation -- focusing public investment, research, science and technology education, worker training, and America's industrial might on a common purpose. It was leadership toward a common positive goal and it worked. In less than eight years Neil Armstrong placed the first human footprint on the lunar surface, and President Kennedy to this day remains honored for his vision and as a leader of courage.

Now America has an Apollo project for the 21st century. Today the stakes are much, much higher. We face an economy hemorrhaging its highest paying and most productive jobs, cities falling apart with over a trillion dollars in unmet public investment in crumbling schools, transportation, and infrastructure. The middle class is increasingly insecure as career ladders are broken and not replaced in new service sector jobs. And on a global scale we face never before seen environmental disruption, rising social inequity, and the emergence of fundamentalist anger that threatens our very security. We need new leaders of vision, and a new unifying call to action.

The Apollo Alliance is a joint project of the Institute for America's Future and the Center on Wisconsin Strategy. The Apollo Alliance is a 501-c3 organization.

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BACK TO TOP »

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BACK TO TOP »

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BACK TO TOP »

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BACK TO TOP »

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BACK TO TOP »

New Energy for Cities

Energy-Saving & Job Creation Policies for Local Governments

The Apollo Alliance
apolloalliance.org

Included in this Document

Introduction (p. 1)

Invest in Renewable Power (p. 3)

1. Solar Energy (p. 4)
2. Geothermal Energy (p. 6)
3. Wind Energy (p. 7)
4. Biomass Energy (p. 8)
   a. Landfill Gas (p. 8)
   b. Municipal Biomass Collection (p. 9)
   c. Methane Digesters (p. 10)
   d. Combined Heat & Power/Cogeneration (p. 11)
   e. Co-Firing (p. 12)

Create High-Performance Buildings (p. 13)

1. Updating Building Codes (p. 13)
2. Energy Audits & Retrofits (p. 14)
3. Green Building Standards for Public Buildings (p. 16)
4. Green Building Incentives for the Public Sector (p. 17)
5. Green and Efficient Purchasing (p. 19)
6. Building Operations & Maintenance (p. 20)
   a. Information Technology (p. 20)
   b. Conservation (p. 20)
7. Innovative Approaches to Utilities (p. 21)
   a. Demand Side Management (p. 21)
   b. Green Pricing Programs (p. 22)
   c. Public Benefits Funds (p. 23)
   d. Decoupling (p. 24)
   e. RPS/Feed-In Tariffs (p. 26)
   f. Community Choice Aggregation (p. 27)

Drive toward Energy Independence (p. 28)

1. Clean and Efficient City Fleets (p. 28)
2. Clean and Efficient Private Fleets (p. 30)
3. Incentives for Efficient Car Use (p. 31)
4. Improving Mass Transit (p. 32)
5. Upgrading Traffic Signals and Street Lights (p. 33)
6. Green Infrastructure (p. 34)

Build High-Performance Cities (p. 35)

1. Rehab Building Codes (p. 36)
2. Brownfield Redevelopment (p. 37)
3. Location Efficient Mortgages (p. 37)
4. Transit-Oriented Development (TOD) (p. 38)
5. Stop Subsidizing Sprawl (p. 39)
   a. Fees and Charges for Infrastructure Development (p. 39)
   b. TIF Reform (p. 40)
6. Smart Grid Expansion (p. 41)

Financing the Clean Energy Future (p. 42)

1. Clean Energy Funds (p. 42)
2. Bonding Initiatives (p. 43)
3. Pension Fund Investments (p. 44)
4. Energy Savings Performance Contracts (p. 45)

Building a Workforce for the Clean Energy Future (p. 46)

1. Job Training Standards (p. 46)
   a. Regional Energy Industry Partnerships (p. 46)
   b. Job Training and Weatherization Asssistance Programs (p. 47)
   c. Apprenticeship Utilization (p. 48)
2. Job Quality Standards (p. 50)
3. Best Value Contracting (p. 51)

About the Apollo Alliance (p. 52)

Endnotes (p. 53)

For More Information

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Introduction

For decades, Americans have fled to the suburbs in search of clean air and open space. Ironically, some of the "greenest" places in America are its dense, vibrant cities. New York City, seen by many as an urban jungle, was recently called the "greenest city in the U.S." because so many of its residents live in efficient multi-story buildings, and use public transit, bicycles, or their own feet to commute to work.[1] City residents also consume about half as much electricity as those who live in more spread-out suburban areas.

So cities can be models for *saving* energy. But just as important, cities can be models for creating good jobs *producing* energy, constructing high-performance buildings, and manufacturing clean-energy technologies. The manufacturing, construction, installation, and maintenance of renewable energy and energy efficiency systems will happen almost entirely in metropolitan areas. The physical infrastructure America needs to build these new technologies—factories, universities, and research parks—is in or near cities. The workers that provide a strong foundation for America's clean energy future already live near this infrastructure. Best of all, because union densities are higher in cities, clean energy jobs in the city are far more likely to be good-paying union jobs than those created outside the city.

America's towns and cities have the innovative and hard-working people, the entrepreneurial spirit, and the political independence to lead the way towards a future where clean energy and good jobs go hand in hand. And there has never been a better, or more urgent, time for cities to flex this power. By reducing energy imports and shifting to homegrown fuels, cities can reduce our $200 billion trade deficit in oil and gas, creating millions of new jobs at home. They can stop funding politically unstable regimes. They can reduce the pollution that makes urban air unhealthy, contributes to asthma and other lung disease, and leads to global warming. Last but not least, by investing in energy-saving technology and cleaner fuels, cities across the country can create millions of good jobs in manufacturing, construction, and maintenance.

In this report, we lay out the **Apollo Alliance's Four-Part Plan** for how cities can embrace a clean energy future:

- **Invest in Renewable Power**
  Generate 25 percent of electricity from clean, renewable sources, through policies and programs that prioritize local production, workforce development, and good jobs.
- **Create High-Performance Buildings**
  Revitalize the built environment by renovating public and private buildings, lowering energy consumption, moving toward renewable energy, and creating good jobs and job training for local residents.
- **Drive Toward Energy Independence**
  Reduce oil consumption 25 percent by 2025 by promoting efficient technologies and clean, renewable fuel alternatives, through policies and programs that prioritize local production and good jobs.
- **Build High-Performance Cities**
  Promote low-energy, high-performance cities and communities connected by regional transportation networks, through policies and programs that prioritize local hiring and good jobs.

Introduction

Many Apollo Alliance strategies—whether energy efficient measures or renewable energy systems—involve up-front capital costs that will result in reduced energy use and savings over time. For that reason, we propose a number of **financing options**, from bonding initiatives to low-interest loans, for cities to use to fund clean energy projects. Moreover, though the Apollo plan automatically creates millions of new jobs in manufacturing, installation, construction and services, cities must ensure that these jobs are high-skill jobs paying a family-supporting wage. To ensure that working Americans have a stake in the 21st century energy economy, we recommend that towns and cities include **job quality and job training standards** in all new energy policies.

With Apollo's Four Part Plan, we offer dozens of proven policies and practices for city officials to choose from. This report is not exhaustive—many towns and cities across the country have made real breakthroughs in energy policy that could not be included here for reasons of space. Instead, we aim to give a glimpse of what is possible when local governments decide to begin the journey toward a cleaner energy future. By starting on this journey, local governments not only help the environment and create good jobs for local residents; they also help themselves by cutting energy costs, relieving pressure on tight budgets, and demonstrating the essential value of public investment in new energy technologies.

Invest in Renewable Power

An increasing number of cities are turning toward, clean, efficient renewable energy to power their buildings and infrastructure. These renewable energy systems allow cities to become more independent from the grid and imported fossil fuels, boost the market for renewable technologies, move to more reliable and affordable resources, and display a visible public commitment to a sustainable energy future. In areas with high summer or winter electricity demands, using small-scale renewable energy systems can also protect residents and businesses from the costly effects of blackouts and brownouts.

Cities can and should leverage their control over public buildings, as well as their ability to provide financing and incentives to renewable energy developers, to bring high-quality jobs in the renewable energy industry to their communities. The vast majority of these jobs are in manufacturing, so cities should concentrate on attracting PV cell, wind turbine, and geothermal heat pump manufacturers, as well as the component part manufacturers that support all these industries. Cities can also ensure that projects on public buildings, or that involve public subsidy, include job quality and training standards.

What Cities are Doing Now

At the end of 2005, the Mayor of **Albuquerque, New Mexico** signed a comprehensive renewable energy measure into law. The resolution calls on the city to adopt policies to establish and implement a City Renewable Energy Initiative, including the following elements:

- The City Office of Economic Development and the Energy Conservation Council will develop a program to provide tax incentives and tax credits, up to $1 million, for solar energy manufacturers or solar research and development companies located within the city.
- The City Department of Municipal Development and the Energy Conservation Council will begin a process to retrofit all existing city-owned buildings and facilities with renewable energy systems, solar energy in particular. The goal of this program is to secure 15 percent of the power for all city-owned facilities from renewable sources within fifteen years. All new facilities over 100,000 square feet will be equipped with renewable energy systems capable of generating at least 25 percent of the facility's estimated energy requirements.
- The City Finance Department will develop a rebate program to encourage the use of renewable energy by city residents, and will amend the Industrial Revenue Bond application process to add points for the creating, production, or use of renewable energy in industrial facilities.
- The city will propose new procurement standards that require agencies to purchase products that reduce toxic chemicals and greenhouse gas emissions, maximize water and energy efficiency, favor renewable energy sources, favor recyclable or compostable materials, and consider life-cycle economics of each product including its manufacture, transportation, use, and disposal.

The resolution also calls on the city to lobby the state legislature to pass net-metering legislation, which will enable the city to sell excess renewable energy from its upgraded city buildings back to the utility grid.

For more information

- Gene Bustamante, Energy Specialist
- Energy Conservation Council
- 505.768.5374
- gbustamante@cabq.gov

Policy link

- Resolution R-05-329: www.cabq.gov/energy/documents/Resolution329.doc

Invest in Renewable Power

1 Solar Energy

One of the most visible commitments a city can make to renewable energy is to install solar electric panels (called photovoltaic or "PV" panels) on public buildings, and to encourage their use on private residences and businesses throughout the city. Installing PV panels on city buildings provides extra security from blackouts during periods of strong electricity demand, such as hot summer days. Because the sun is most intense during mid-day, PV panels provide electricity when demand is highest. Solar power can also be used to heat a building's water supply. Constructing or retrofitting a building to harness solar energy for lighting or hot water is easy, cost effective, and environmentally friendly. Solar energy is also one of the most environmentally friendly ways to generate electricity and heat. According to the EPA, a typical 6 kW solar system will save 32 pounds of nitrogen oxides, 44 pounds of sulfur dioxide and 17,199 pounds of carbon dioxide each year—equivalent to the carbon dioxide that would be absorbed by planting two acres of trees. In addition to installing these systems on their own buildings, many cities encourage their use on private buildings through tax credits and other incentives.

What Cities are Doing Now

Chicago, Illinois is part of a public-private partnership focused on advancing the development of the solar energy industry in the Chicago metropolitan area. The Chicago Solar Partnership, which includes the solar design and installation company Spire Solar Chicago and the Pipe Fitters Local 597, provides outreach and education on solar energy and technical assistance to end users. Founded in 2000, the partnership has already worked to install nearly 2 MW of solar power in Chicago, mostly on buildings within city limits.

This is a model project because it focuses not only on energy production but also on jobs. In 2003, Chicago gave interest-free financing to the solar manufacturer Solargenix Energy in order for the company to relocate their facility to the old stockyard district in downtown Chicago. The facility now employs 15 people full-time, and manufactures 30–40 solar collectors per day.

For more information

- Kathy Quasey, Program Developer
- Chicago Solar Partnership
- 312.744.0470
- kathy.quasey@cityofchicago.org
- http://www.chicagosolarpartnership.com/

Santa Clara, California rents private citizens and businesses solar equipment to heat their swimming pools, process water, and domestic hot water. The solar components (solar collectors, controls and storage tanks) are owned and maintained by the city; renters pay an initial installation fee and a monthly utility fee that varies according to the size of the installation. Renters keep any money saved in energy bills.

For more information

- Santa Clara City Solar Utility
- 408.615.2200
- www.ci.santa-clara.ca.us/pub_utility/ws_water_heating.html

Oroville, California has proved itself to be a forerunner in the use of solar energy and development. During the California energy crisis, when electricity rates jumped nearly 41 percent, the Oroville Sewage Commission was struggling to keep up with rising costs and increase self-reliance and sustainability. Within six months, using a combination of general fund revenues and redevelopment agency bonds, Oroville installed a 520 kW solar system in its Wastewater Treatment Plant that cut power costs by about 80 percent.

The system results in annual savings of $58,000 for the sewage treatment plant in demand rates alone and is projected to pay for itself in only nine years. The wastewater treatment plant has notable environmental benefits as well, reducing emissions by 1.4 million pounds of carbon dioxide, 5,800 pounds of sulfur dioxide and 2,800 pounds of nitrogen oxide.

For more information

- Ray Sousa, Superintendent
- Sewerage Commission-Oroville Region
- 530.534.0353
- scor-ray@oroville.net

1 Solar Energy cont...

Honolulu, Hawaii, in partnership with the Hawaiian Electric Company, offers low-interest loans (0 percent or 2 percent) to qualified homeowners who want to install Solar Water Heating Systems on their homes. Landlords of affordable or low-income properties are also eligible for the program. Honolulu estimates that home owners who install the solar water heating systems can expect to use 90 percent less fossil fuel-based electricity than they would without the systems. To further promote the purchase of solar hot water systems, the Hawaiian Electric Company provides $750 rebates off the purchase prices of qualified systems.

For more information

- Dan Tully
- Rehabilitation Loan Branch
- 808.527.5917
- www.co.honolulu.hi.us/dcs/solarloan.pdf
- Ron Richmond, Analyst
- Hawaiian Electric Utility Co.
- 808.543.4784
- ron.richmond@heco.com

Tucson, Arizona developed an innovative third-party financing mechanism for installing solar hot water heaters on city swimming pools. Called an Independent Energy Producer (IEP) contract, the city's RFP calls for private companies to bid on designing, building, operating, maintaining, and financing Solar Pool Heaters and Domestic Hot Water Heating systems for five existing public pools. Under the IEP contract, the private company builds and maintains the system with no up-front cost to the city. Once the system is in place, Tucson will pay the difference between its original energy costs and its new costs to the contractor, thus paying off the cost of construction. Once the system is paid off, Tucson will own the system and benefit from future reduced energy bills.

For more information

- Vinnie Hunt, Energy Manager
- 520.791.4724
- vhunt1@ci.tucson.az.us

Policy link

- In conjunction with the United States Department of Energy, the city of Tucson constructed an informative website that explains how to structure third-party financing contracts for renewable energy systems, available at: http://energy.sandia.gov/index.htm.

Oakland, California developed one of the state's largest municipal solar projects with a combined 1.1 MW serving Oakland's Ice Center and Municipal Service Center. The two systems cover 85,000 square feet of roof space. At the Ice Center, the 372 kW PV system generates 31 percent of the electricity used to make the ice for two skating rinks in downtown Oakland, and the 760 kW system at the Municipal Service Center in the Coliseum Business Park covers 82 percent of that building's energy needs. The systems are estimated to eliminate 385 tons of carbon dioxide emissions per year and save $244,000 in energy costs each year.

The PV systems were coupled with energy efficiency measures as a way to further decrease the facilities' utility costs and to increase the percentage of electricity generated by solar.

For more information

- Scott Wentworth, Energy Engineer
- City of Oakland Public Works Agency
- 510.615.5421
- swentworth@oaklandnet.com

Invest in Renewable Power

2 Geothermal Energy

Geothermal energy systems use the Earth's natural sub-surface heat to produce electricity, or to directly heat water or air. To date, there are already 2,800 MW of geothermal capacity deployed in the United States, enough to power 1.7 million households. While the geothermal resources needed to directly produce electricity are geographically limited, every region of the U.S has some available geothermal energy.

Geothermal heat pumps, the most common building-scale geothermal technology, are generally used to take pressure off buildings' HVAC (Heating, Ventilation and Air Conditioning) systems. The heat pump transfers heat from the soil to the house in winter and from the house to the soil in summer, using an environmentally friendly heat exchange fluid similar to antifreeze. This process is very efficient, reducing electricity consumption by 30 to 60 percent. Operating and maintenance costs are quite low. Because of the easy application and quick payback periods of geothermal systems, several cities are also providing incentives for integrating them into new construction projects.

What Cities and Counties are Doing Now

North Bonneville, Washington replaced the 20 year-old electric resistance duct system in its City Hall with a ground-coupled geothermal heat pump system that provides both heating and cooling for the 4,600 square foot building. The system circulates heating and cooling fluid at a rate of 9 to 15 gallons/minute through deeply drilled pipes. Regardless of outside temperature, the fluid always returns to surface at the average ground temperature of 54 degrees Fahrenheit, dramatically decreasing the pressure on the building's existing heating and cooling system. The total cost of the system was $16,761. Staff estimate that the system decreases electricity use by 34,000 kWh/yr, saving $1,500 per year compared to the old electric resistance system.

For more information
- Ray Hays, Public Works Manager
- 509.427.8182

The Stark Metropolitan Housing Authority in **Canton, Ohio** was faced with the challenge of how to improve living conditions at Metropolitan Towers, a 150-unit, eight-story building comprised mostly of studio apartments. Built in 1972, the building was in decline and the vacancy rate was rising dramatically. The Housing Authority decided to install a geothermal energy heat pump system to save energy dollars while still providing a comfortable environment. At the same time, the building received an entire energy retrofit, including new roofing, energy-efficient windows, compact fluorescent lighting, low-flow toilets, a centralized domestic water heating system and additional insulation. SMHA saves $29,000 annually as result of these improvements, and releases 40,000 tons less carbon dioxide into the air than it did before the retrofit.

For more information
- Steve Ewing, Energy & Compliance Supervisor
- Stark Metropolitan Housing Authority
- 330.454.8051
- ewingnets@aol.com or info@starkmha.org

Thief River Falls, Minnesota provides low-interest loans and incentives to customers installing or retrofitting ground source heat pumps. The current program offers up to $8,000 at five percent interest and a rebate of $2,000 to offset the cost of installing the system's external loop field. The town has also installed heat pumps in various public buildings including the elementary school, utility shop building and City Hall.

For more information
- Arlo Rude, Utilities Director
- 218.681.5816
- citytrf@citytrf.net

The **Big Island of Hawaii** uses geothermal energy to meet approximately 20% of its total energy needs. Puna Geothermal Venture delivers an average of 25–30 megawatts of energy on a continuous basis. Located about 21 miles south of the city of Hilo, the facility is located on about 25 acres along the Lower East Rift Zone of the Kilauea Volcano. From 1997–2001, this project displaced the need to burn 475,000 barrels of fuel oil on average each year. With the State of Hawaii's 90% dependence on foreign oil, a diversified renewable portfolio is especially important.

For more information
- Barry Mizuno
- Puna Geothermal Ventures
- 808.965.6233
- www.punageothermalventure.com

3 Wind Energy

Of all renewable energy technologies, the one with greatest potential to replace a large number of conventional power plants is wind power. Wind power is cost-competitive with coal-fired plants, produces no emissions, and offers price stability to customers and utilities.

Municipal utilities located in areas with strong wind resources can easily begin increasing the supply of wind power available to utility customers. In cities with private utilities, local government can commit to purchasing a set amount of wind power each year and can encourage residents to do so as well. In addition, cities can promote small-scale wind turbines by adopting wind-friendly zoning and planning regulations.

What Cities are Doing Now

Bowling Green, Ohio led the development of Ohio's first utility-scale wind farm, a groundbreaking project that is spurring interest in wind power development throughout the state. In the late nineties, Bowling Green's Utilities Department established a green power pricing program that set aside money to pay for future wind and solar development, including further testing of the region's wind resources. When wind resources proved to be sufficient, Bowling Green led a coalition of ten municipal utilities which issued bonds to finance the wind farm's construction. The wind farm consists of four 1.8 MW towers, and produces enough electricity to power a village of 1,560 homes.

For more information
- Daryl Stockburger, Director of Utilities
- City of Bowling Green
- 419.354.6246
- daryl.stockburger@bgohio.org

In 2005, **Boulder, Colorado** partnered with Western Resource Advocates and several renewable energy suppliers in a commitment to increase city residents' renewable energy purchases. Boulder was already one of the nation's leading supporters of wind power, with more than 5,000 households and 300 commercial and industrial customers purchasing wind power for their home or business. However, the city sought to deepen its commitment by setting a goal to sign up 500 additional wind power customers from the residential and commercial sectors.

In just two months, the Boulder Wind Challenge succeeded in signing up 1,150 new wind power subscribers, more than twice the initial goal. New subscribers purchased almost sixteen million kWh of renewable energy, which has the same environmental benefits as taking 2,440 cars off the road for a year and saving 92 acres of trees from deforestation. Due in part to the challenge's success, the Environmental Protection Agency (EPA) has designated Boulder a Green Power Community, the first place in Colorado to receive this designation.

For more information
- Carolyn Weinreich
- Office of Environmental Affairs
- 303.441.1914
- weinreichc@ci.boulder.co.us

Mason City, Iowa recently passed City Ordinance 06–03, which allows the construction of small windmills on private property in commercial, industrial and residential zones. Mason City's ordinance requires permits for windmills and sets limits on where they can be built. Residential windmills cannot exceed 100 feet in height and can be put only in backyards. The lot has to be big enough so that if the windmill topples it doesn't cross property lines.

Mason City's ordinance was spurred by a local resident who wanted to construct a windmill to power his local business. Because of the area's strong wind resources, this resident estimates he can save enough on electric bills to pay for a $40,000 system in eight to ten years.

For more information
- Mayor Roger Bang
- 641.421.3600
- mayor@masoncity.net

4 Biomass Energy

The most widely available form of renewable energy is bioenergy—the energy derived from plants and plant-derived materials, including trees, plants, wood wastes, animal wastes, and some industrial wastes. This diverse set of raw materials can be converted into equally diverse forms of energy—electricity, liquid and gaseous fuels, and a variety of products. By better utilizing urban and exurban biomass resources, cities can move toward a homegrown source for fuel and power, while also decreasing waste and preserving open farmland.

Landfill Gas (LFG)

Nearly every city in America has a nearby landfill. An increasing number of cities are harnessing the methane gas these landfills produce, and using it to generate power. As of December 2005, there are approximately 395 operational LFG energy projects in the United States and nearly 600 landfills that are good candidates for projects. About two-thirds of these projects generate electricity, and the other third pipe the gas to local businesses that use it for heating purposes.

For more information on landfill gas technology and to find out whether there is a good landfill candidate near your city, visit the EPA's Landfill Gas Outreach Program at: www.epa.gov/landfill/overview.htm.

What Cities are Doing Now

Denton, Texas partnered with California-based Biodiesel Industries, Inc. to harness the landfill gas from a city-managed dump, and use it to power a biodiesel production facility. The new biodiesel facility has an initial production capacity of three million gallons of pure biodiesel per year.

For more information
- Vance Kemler, Director of Solid Waste
- 940.349.8444
- vance.kelmer@cityofdenton.com

Burbank, California recently installed a ten-microturbine gas system at its landfill to divert approximately 160 cubic feet per minute of gas from the landfill flare and generate up to 300 kilowatts of green power. The system has just one moving part, uses no oil, lubricants or coolants, and is designed to operate at full load capacity 24 hours a day, 365 days a year.

For more information
- Bonnie Teaford, Public Works and Capital Project Manager
- 818.238.3915
- bteaford@ci.burbank.ca.us

4 Biomass Energy cont...

Municipal Biomass Collection

Tree trimmings and fallen branches produce a large amount of wood waste in American cities each year. Most cities already collect this material and use it as wood chips for landscaping in city parks. However, some cities are beginning to view this wood waste as a valuable renewable energy source and are finding higher-value uses for it.

What Cities are Doing Now

Saint Paul, Minnesota, through its partner District Energy St. Paul, contracts with a local company to manage a wood recycling facility that turns waste wood into biomass fuel. The local company sorts through the wood and diverts 300,000 tons of wood waste to a nearby co-generation facility, where it is used to produce electricity for local residents. The initiative saves the city money by keeping wood wastes out of the landfills and helps the environment by providing a renewable fuel for the power plant.

For more information

- Rick Person, Project Manager
- Department of Public Works
- 651.266.6122
- rick.person@ci.stpaul.mn.us
- District Energy St. Paul, Inc.
- 651.297.8955
- http://www.districtenergy.com/

The Phillips Community Energy Cooperative (PCEC) in **Minneapolis, Minnesota** is working to transform a waste transfer station in South Minneapolis into a model of environmentally friendly, community-based energy. The Phillips Biomass Community Energy Project will use urban tree trimmings and agricultural residues to fuel a combined heat and power (CHP) plant. Slated to come online in 2007, the project is expected to generate 20 MW of electricity that will be sold to the electric grid, while the heat will be used for homes in the community surrounding the project. When running at full capacity, the project will meet the energy needs of approximately 20,000 households, creating greenhouse gas reductions equivalent to taking 40,000 cars off the road. In addition, the project will create approximately 20 good-paying permanent jobs and another 200 jobs during construction of the project.

For more information

- Carl Nelson
- The Green Institute/PCEC
- 612.278.7117
- cnelson@greeninstitute.org
- http://renewableenergy.greeninstitute.org/

4 Biomass Energy cont...

Methane Digesters

In agricultural areas, many cities struggle with preserving their water quality as runoff from manure-fertilized fields enters streams and rivers. Figuring out environmentally responsible ways to control the manure produced by farm animals is a top priority for rural communities. But human and animal waste disposal is also an issue for urban communities; recently some cities have become concerned by the large amounts of pet waste disposed of in city landfills.

In the face of these challenges, cities are developing new ways to promote the use of methane digesters. Methane digesters are large holding tanks that use bacteria to break down human, animal, and other organic wastes. As these wastes decompose, they produce methane gas, which is then captured by the digester and burned in a boiler to produce renewable power. Methane digesters are an exciting solution to both the need for renewable energy, and the problems of waste disposal and odor control.

What Cities and Counties are Doing Now

San Francisco, California is piloting a program to turn dog waste into energy. In partnership with a private company that collects the city's trash, San Francisco is distributing special biodegradable bags in one of the city's main dog parks. These biodegradable bags allow trash collectors to deposit them, and their contents, directly into a methane digester. The methane can be piped directly to a gas stove, heater, turbine or anything else powered by natural gas. According to the city, animal feces make up nearly four percent of residential waste, or 6,500 tons a year—nearly as much as disposable diapers.

For more information

- San Francisco Recreation and Park Department
- 415.831.2700

Cayuga County in central **New York State** is planning an innovative partnership with ECO Technology Solutions to develop and construct a community anerobic digester to process organic waste from local dairies and food processors; the resulting biogas will generate electricity for various county buildings. The Cayuga County Soil and Water Conservation District is leading the project as a way to tackle both energy and water quality problems in the community.

Cayuga County will collect manure from several small to mid-size farmers who cannot support a manure treatment facility on their own. The collected manure will be used to power a digester, which the county expects to generate 625 kW of electricity. In return, local farmers will receive a truckload of liquid fertilizer to use in place of land-spread manure. This liquid fertilizer is a byproduct of the digester process and is lower in phosphorus, preserving water quality in the county. This innovative renewable energy project is expected to be operational by spring 2007.

For more information

- Jim Hotaling, Executive Director
- Cayuga County Soil and Water Conservation District
- 315.252.4171
- jim-hotaling@ny.nacdnet.org
- Bill Cetti
- ECO Technology Solutions
- 703.669.3221

4 Biomass Energy cont...

Combined Heat and Power (CHP)/Cogeneration

Cities can significantly improve the efficiency of their electrical and heating systems through the use of combined heat and power (CHP, a.k.a. cogeneration) technology. CHP systems use the same fuel combustion to produce both thermal energy for heating (usually in the form of steam) and electricity (often via a steam-driven turbine). These efficient systems recover heat that normally would be wasted in an electric plant, and save the fuel that would otherwise be used to produce heat or steam in a separate unit. CHP fuel savings are typically 35 percent compared to standard power stations and heat-only boilers, and CHP plants are 70–90 percent efficient,[2] compared to efficiencies of 33–60 percent for standard power plants.[3] This increase in efficiency and decrease in fuel use translates into cost savings and emissions reductions.

What Cities are Doing Now

Honolulu, Hawaii has installed a 200 kW cogeneration unit on its City Hall, Honolulu Hale. The cogeneration unit, along with lighting and HVAC upgrades, was installed with assistance from the United States Department of Energy's Rebuild America program. As a result of the retrofit, energy use decreased 39 percent, saving more than $125,000 per year.

For more information

- Allyn Lee, Project Manager
- City and County of Honolulu
- 808.523.4106
- alee2@co.honolulu.hi.us

Philadelphia, Pennsylvania recently negotiated a long-term service agreement with Trigen–Philadelphia, a local power company, to secure the development of a combined heat and power facility in the city. Trigen bought an aging steam heating district system in southwest Philadelphia in 1996 that provided 70 percent of Philadelphia's downtown buildings and institutional facilities with steam for heating, cooling, domestic hot water production, and cooking through 33 miles of underground steam pipe. This large central steam system provided heat to a number of downtown buildings through oil-fired boilers, but did not produce electricity for the grid.

Pursuant to its agreement with the city, Trigen retrofitted the old steam system with a 118 MW gas turbine that funnels its exhaust gases through a heat recovery system to generate high pressure steam. This high pressure steam then goes through a 52 MW condensing steam turbine to generate electricity; the system also provides low-pressure steam for continued use in the district heating system. The new system has a fuel conversion efficiency of 70 percent, more than twice the national average for utility generation. The project also uses 13 percent less fuel than separate heat and power, conserving 1.6 billion standard cubic feet of natural gas and 61,000 barrels of oil a year, and reducing carbon dioxide emissions by 110,000 tons—the equivalent of planting 30,000 acres of forest or displacing the annual greenhouse gas emissions from 10,000 households.

For more information

- Kevin Brown, Vice President and General Manager
- Trigen–Philadelphia
- 215.875.6900 ext. 128

4 Biomass Energy cont...

Co-firing

Another way of using biomass to reduce our dependence on foreign fuels is to burn it in conjunction with traditional fossil fuels at existing power plants. While most of the nation's older power plants cannot easily burn 100 percent biomass, many can burn a combination of biomass and fossil fuels. Using biomass as a secondary and supplemental fuel source in power plants reduces carbon dioxide and nitrogen oxide emissions. This approach provides a low-cost renewable energy option that utilizes local biomass resources and existing energy infrastructure.

As with all biomass-based strategies, it is important that cities considering co-firing projects prioritize responsible land-use policies, such as burning agricultural and wood waste (corn stover, crop wastes, wood pellets, etc.) rather than allocating vast tracts of open land to biomass fuel crops. It is also important to avoid co-firing any waste products that may create toxic air pollution.

What Cities are Doing Now

The cities of **Hibbing** and **Virginia, Minnesota** are working with state and federal officials to repower two older coal-fired power plants with locally-sourced biomass material. The Laurentian Energy Authority, a joint venture of the two cities' public utilities, seeks to capitalize on the market created by Minnesota's renewable energy requirements. The repowered plants will produce 35 MW of renewable power from biomass, preserve 70 existing jobs and create 60–100 new jobs in the communities. The project will use biomass grown and harvested by local loggers, stored at a separate wood yard between the two cities. The cities of Hibbing and Virginia supported the project with $84 million in revenue bonds that will be repaid by monies generated by the project.

For more information

- Terry Leoni, General Manager
- Virginia Department of Public Utilities
- 218.748.7564
- leonit@vpuc.com

- Jim Kochevar, General Manager
- Hibbing Department of Public Utilities
- 216.262.7728
- jimk@hpuc.com

Create High-Performance Buildings

Residential and commercial buildings account for over a third of U.S. energy use and carbon emissions.[4] As construction methods and insulation technology have improved, so too has our ability to build structures that use less energy, contribute fewer pollutants to our environment, and improve comfort and productivity.

City governments, which directly control thousands of public buildings and have influence over millions of private residential and commercial buildings, are in a key position to bring innovative design and efficient construction principles into everyday use around the country. Cities also have the leverage to ensure that the many construction, operating and maintenance jobs that are associated with green building and energy efficiency retrofits go to high-skilled, well-paid workers in their communities.

1 Updating Building Codes

Millions of new buildings are constructed in American cities each year. Updating building codes so that new construction is more efficient can save residents and businesses countless dollars in energy costs. For example, the US Department of Energy (DOE) estimates that incorporating efficient design into new buildings can cut heating and cooling costs by close to 50 percent.[5] Updating building codes can also create new jobs in construction, upgrading and installation—jobs that are often unionized and pay a family-supporting wage.[6]

In order to ensure that all new buildings constructed in a city meet a minimum level of energy efficiency, city or county governments can adopt legislation updating existing residential and commercial building codes to the most recent International Energy Conservation Codes (IECC) standards. Updating building codes to the most recent IECC standards, and requiring that any future IECC updates be adopted within one year of publication, ensures that new construction uses less energy, contributes fewer pollutants to our environment, and improves comfort and productivity.

What Cities and Counties are Doing Now

Seattle, Washington adopted its first energy code in 1980, and most recently adopted the Washington State Energy Code with amendments in 2004. This code is considered by building professionals across the country to be one of the better examples of a state and local energy code, because it sets mandatory standards for most houses and businesses at levels that are more stringent even than the IECC recommends.

For more information
- Seattle Department of Planning and Development
- 206.684.8600

Policy link
- Seattle Energy Code: http://www.seattle.gov/dpd/energy/default.htm

The city of **Aspen** and **Pitkin County, Colorado** have adopted, with local amendments, the 2003 International Codes. This includes all building, mechanical, plumbing, fuel gas, fire, property maintenance, and existing building codes. Pitkin County has also taken a larger look at the issue of residential energy efficiency and included extra requirements for especially high-energy homes. For example, homes with certain high energy-use features (for instance, the home is more than 5,000 square feet, or includes a hot tub or heated pool) must install energy-efficient appliances or renewable energy equipment to offset that extra energy consumption, or must contribute to a fund that invests in such features elsewhere in the community.

For more information
- City of Aspen Community Development
- 970.920.5090
- http://www.aspenpitkin.com/depts/41/bldg_efficient.cfm

Policy links
- IECC codes: www.iccsafe.org/
- DOE Building Energy Codes Program (financial and technical assistance): www.energycodes.gov/implement/doe_assist.stm
- Building Codes Assistance Project: www.bcap-energy.org/

1 Updating Building Codes cont...

On March 30, 2005 the **Phoenix, Arizona** City Council adopted a new "Phoenix Building Construction Code," which includes the 2003 International Energy Conservation Code (IECC) and its 2004 Supplement. The new code also provides minimum health and safety standards for the construction of buildings in Phoenix.

For more information
- Anne Sobczak
- City of Phoenix Development Services
- 602.534.3878
- anne.sobczak@phoenix.gov
- www.phoenix.gov/DEVSERV/index.html

2 Energy Audits & Retrofits

Cities directly control many buildings and must pay utility bills for all of them. Incorporating efficiency measures in city buildings presents a great opportunity for local governments to save money and help the environment. Simple retrofits to windows and electrical, lighting, or heating systems can yield large energy cost savings. Such retrofits not only save the government money, they also lead to more comfortable work environments, which have been linked to higher worker and student productivity.

City governments should conduct energy audits on all city-controlled buildings to inventory current energy use and identify the most cost-saving and efficient retrofits available for these buildings. These audits and retrofits generally bring in significant savings, thus paying for themselves quickly. As an example, federal government efficiency standards instituted in the mid-1980s reduced building energy consumption by 23 percent over a 15-year period, saving taxpayers an estimated $1.4 billion per year.[7]

Cities can also encourage building owners in the private sector to conduct similar audits and retrofits, for instance by requiring that buildings include efficiency upgrades prior to building sale.

What Cities are Doing Now

Springfield, Massachusetts is preparing to embark on an estimated $20 million energy improvement program for public buildings through projects ranging from new boilers to attic insulation. The city will hire a firm to conduct an energy audit of 90 buildings, including City Hall, Symphony Hall, schools, libraries, fire stations, the police station and park buildings.

For more information
- Patrick J. Sullivan, Director
- Parks, Buildings & Recreation Management
- 413.787.6440
- http://www.springfieldcityhall.com/Park/

The city of **Chula Vista, California** developed a City Energy Plan to protect city agencies, residents and businesses from the high cost and unreliable supply of energy. City offices implemented network software to put computer monitors in sleep mode when unattended for more than ten minutes—a move that saves approximately $13,000 per year. The city also replaced appliances with higher efficiency models. In addition, the city enacted an extensive public awareness and education campaign that provided residents with a free home energy audit, energy efficiency compact fluorescent lights (CFLs) and information on energy rebates. The city's efforts resulted in a 15 percent reduction in citywide energy use in 2001. The city's free energy audit program was also a success: 1,500 homes were audited.

For more information
- Office of the City Manager
- Recycling and Conservation Division
- 619.691.5122
- SaveEnergy@ci.chula-vista.ca.us

2 Energy Audits & Retrofits cont...

Berkeley, California was the first city in the nation to require that anyone selling a residential building install conservation measures at time of sale, or whenever improvements valued at more than $50,000 are made to residential property. Cost and energy-saving measures required by Berkeley's Residential Energy Conservation Ordinance (RECO) include insulating ceilings, water heaters, and hot water pipes; sealing furnace ducts; installing fluorescent lighting and weather stripping; blocking hot-air flow out of chimneys; and conserving hot water by installing low-flow shower heads. To date, approximately 12,000 residences (30 percent of the housing stock) have been certified as meeting RECO requirements. Berkeley also requires conservation measures in commercial buildings that are sold or substantially renovated.

For more information

- Phil Kamlarz, City Manager
- 510.981.7100

Policy link

- Berkeley Residential Energy Conservation Ordinance: http://www.ci.berkeley.ca.us/bmc/Berkeley_Municipal_Code/Title_19/16/index.html
- Commercial Buildings—Energy Conservation Measures: http://www.ci.berkeley.ca.us/bmc/Berkeley_Municipal_Code/Title_19/72/index.html

Ashland, Oregon offers extensive assistance to homeowners who audit and retrofit their homes, including home energy analysis, duct sealing and weatherization rebates, zero interest loans, and rebates for energy efficient appliances.

For more information

- Cathy Cartmill
- City of Ashland Conservation Division
- 541.552.2063
- cartmilc@ashland.or.us
- http://www.ashland.or.us/Page.asp?NavID=1366

Create High-Performance Buildings

3 Green Building Standards for Public Buildings

While energy audits and building codes can help existing buildings become more efficient, implementing green building standards for city-funded projects ensures that future buildings will be efficient and environmentally friendly. The United States Green Building Council (USGBC) sets national standards for green buildings through its Leadership in Energy and Environmental Design (LEED) rating system. The most commonly accepted and widely used green building standard, LEED awards credits to structures in six categories: sustainable siting, water efficiency, energy and atmosphere, materials and resources, indoor environmental air quality, and innovation in design. Each structure achieves a LEED certification level ('certified,' 'silver,' 'gold,' or 'platinum') based on how many points it scores in each of these categories.

Using this comprehensive approach, green building creates environmentally sustainable, healthy, and economical buildings. Green building techniques can reduce building energy costs by 20–50 percent[8] and water usage by at least 50 percent outdoors and 30 percent indoors, resulting in substantial savings for cities and taxpayers.[9] At the same time, studies show that the additional cost of building green is only $4 per square foot, or about two percent of building costs, yet net savings over a twenty year period are between $48.87 and $67.31 per square foot.[10]

Green building also requires a skilled labor force, and union apprenticeship and journeyman programs are well-suited to train workers in the modern construction techniques associated with green building projects. Adopting green building standards that are coupled with public-private partnerships with labor can lead to the creation of high-quality jobs for Trade unionists such as Sheetmetal Workers, Electrical Workers, Glaziers, and Plumbers and Pipefitters.[11]

What Cities are Doing Now

In 2005, with the help of the **New York City Apollo Alliance**, **New York City** passed Local Law 86, which will require many of the City's new municipal buildings, additions, and renovations to achieve rigorous standards of sustainability. The law applies to the construction and rehabilitation of municipal buildings (including schools, hospitals and city agency offices) and other construction projects that receive $10 million or more of city funds. It will affect approximately $12 billion in construction over the City's ten-year capital plan, including $5 billion in school construction. By significantly improving the performance of major new and renovated public capital construction projects, the bill ensures that energy costs for these projects will decrease at least 20–25 percent and the waste and pollution generated by buildings will be reduced.

For more information
- Joanne Derwin, Program Director
- NYC Apollo Alliance
- Joanne_derwin@qc.edu

Seattle, Washington requires all city-funded projects over 5,000 square feet to meet LEED Silver standards. To do so, the city operates an interdepartmental group of city employees, the Green Building Team, which acts as resident experts on elements of green building.

Seattle's City Hall and Justice Center are two new high-rise downtown buildings that were built to LEED Silver standards under Project Labor Agreements with the Seattle/King County Building and Construction Trades Council. The Justice Center was equipped with special mechanical features including variable flow chillers in its cooling system, energy-conserving devices built into the HVAC systems, and airflow handling on a floor-by-floor basis. The Justice Center's design elements cut energy costs by 32 percent. This was a complex Ironworker/Glazier installation.

For more information
- Richard Gelb
- Office of Sustainability and Environment
- richard.gelb@seattle.gov
- http://www.ci.seattle.wa.us/dpd/Sustainable_Building/index.asp

In 2003 **Dallas, Texas** implemented a Green Building Program to incorporate sustainable building design and construction practices into new municipal building projects. All projects over 10,000 square feet will be LEED Silver Certified. In addition, LEED certified projects will receive expedited building permit and code review. Currently approximately 38 projects throughout the Dallas/Fort Worth area are seeking LEED Certification. Thirteen are city of Dallas Projects.

For more information
- Jill Jordan
- Assistant City Manager
- 214.670.5299

3 Green Building Standards for Public Buildings cont...

In 2000, the **Chicago, Illinois** Department of Environment initiated the City Hall Rooftop Garden Pilot Project as part of the EPA's Urban Heat Island Initiative. During the garden's first summer, the roof surface temperature dropped by 70 degrees, and the surrounding air temperature dropped by 15 degrees. Since the City Hall project, about 150 public and private buildings have installed green roofs, including a downtown McDonald's restaurant and an Apple computer store. These projects were spurred in part by the city's green building policies, which apply to new public buildings and publicly-subsidized private developments and require that a certain percentage of roof space be allocated to green roofs. Chicago is supplementing this program by awarding twenty $5,000 grants to help the owners of small commercial properties and residential buildings install green roofs.

For more information

- Sadhu Johnston, Commissioner
- City of Chicago Department of Environment
- 312.744.7606
- sjohnston@cityofchicago.org

Policy link

- Chicago's Green Building Agenda: http://tinyurl.com/rr4zq

4 Green Building Incentives for the Private Sector

All the same arguments for greening public buildings apply to private buildings—and there are far, far more private buildings than city-owned structures. Cities may not have direct power over private residential, commercial, or industrial properties, but they do have some ability to regulate these structures and to provide incentives for building owners to embrace green building standards. Examples of government-backed green building incentives include property tax incentives, grant programs and rebates, modifications to the city's zoning regulations and/or expedited permit review for qualified green building projects.

What Cities and Counties are Doing Now

The **Alameda County, California** StopWaste.Org agency (comprised of the Alameda County Waste Management Authority and the Alameda County Source Reduction and Recycling Board) provides green building technical assistance and support to the **West Oakland Apollo Alliance**, which also includes community members and business and labor representatives. One of the Alliance's most innovative projects is a green building demonstration project known as Red Star Homes, which is built on the site of the old Red Star Yeast factory—formerly the source of major toxic air contamination in the community. West Oakland Apollo is working to get the proposed 119-unit condominium development built to green building design and construction standards, and to ensure the project employs both union contractors and local low-income residents who have completed a community-based green construction skills training program.

For more information

- Carla Din, Western Regional Field Director
- Apollo Alliance
- din@apolloalliance.org

Arlington County, Virginia established a green building incentive program in 1999 to encourage the construction of more environmentally friendly office buildings. The program rewards developers and companies that construct LEED certified buildings with permission to add extra density or height to their buildings, beyond what is typically allowed under the county's zoning standards.

For more information

- Randy Bartlett, Director of Infrastructure and Operations
- 703.228.3711
- rbartlett@arlingtonva.us
- www.co.arlington.va.us

4 Green Building Incentives for the Private Sector cont...

Aspen, Colorado instituted an Efficient Building Program in 2002, designed to educate the building trades and general public about ways to use resources more efficiently. All building permit applications submitted for review must include a completed EB Checklist. If the project includes a remodel and/or demolition/ deconstruction, then a Deconstruction Plan form must be filled out in addition to the Checklist. Applicants must accumulate a number of points for each project, based on their inclusion of certain efficiency measures, such as reduced construction waste, use of recycled and renewable resources, energy efficiency, indoor air quality, renewable energy use, and water conservation, as well as efficient building techniques. The city requires different numbers of points depending on the size and type of the project.

For more information

- City of Aspen Community Development
- 970.920.5090
- http://www.aspenpitkin.com/depts/41/bldg_efficient.cfm

Santa Monica, California's Green Building Program was designed to increase sustainability in all new buildings without putting excessive burdens on builders or developers. Many of the measures have some associated initial cost, though others can actually reduce first costs and operating costs, and all of them increase the overall value of the building. Most of the city's green building requirements apply to commercial construction, major renovation projects, and multi-family residential projects with more than three units. The Green Building Program provides specific "green" design and construction strategies in the following topic areas: Building Site and Form, Landscaping, Transportation, Building Envelope and Space Planning, Building Materials, Water Systems, Electrical Systems, HVAC Systems, Control Systems, Construction Management, and Commissioning.

For more information

- Greg Reitz
- Environmental Programs Division
- 310.458.2213
- greg.reitz@smgov.net
- http://smgreen.org/

Oakland, California offers inspections and auditing services and financial support to the Alameda County Green Business Program to promote Green Business certification in Oakland. So far, over 180 Alameda County businesses and public agencies have formed partnerships with the San Francisco Bay Area Green Business Program.

For more information

- Pam Evans, County Coordinator
- 510.567.6770
- pamela.evans@acgov.org
- http://www.greenbiz.ca.gov/AboutUsAC.html

5 Green and Efficient Purchasing

In addition to owning and regulating large amounts of real estate, buildings, and transportation infrastructure, city governments also purchase an immense number of products—everything from paper to paint, motor oil to HVAC systems. These goods all require energy and resources to produce, package, transport, use, and/or dispose. Through their daily purchases, local governments exert substantial power over the market. Choosing products with minimal life-cycle impacts can save energy, reduce emissions, increase the market for high performance products and even save money. (Note: while environmentally preferable purchasing policies can encompass a wide range of products—from recycled paper to less toxic cleaning materials to locally grown food—we focus here on purchasing decisions most closely related to energy.)

One simple adjustment to a city's purchasing policy is to require Energy Star-rated appliances and office equipment. These products, which carry the EPA's visible Energy Star label, use 25–50 percent less energy without compromising quality or performance.[12] According to one study, replacing 100 inefficient computers with EnergyStar computers and monitors can save $10,000 in energy costs in five years.[13]

What Cities are Doing Now

In 2004, the **Dallas, Texas** City Council enacted an Environmental Procurement Policy directing the City, along with all its consultants and contractors, to purchase and use recycled materials and other environmentally preferred products whenever feasible. The policy also directed city agencies to implement a training program for all staff making purchasing decisions.

For more information
- Leah Register
- Business Development & Procurement Services
- 214.670.3329

In June 2001, **Chicago, Illinois** partnered with the Chicago Transit Authority, the Park District, and 48 surrounding municipalities to purchase green power, beginning with three percent in the first year and climbing to 20 percent over the next five years. The awarded bidder was Commonwealth Edison with the Environmental Resource Trust (ERT); the utility will sell 'green tickets' that are certified by ERT. Profits from the initial sale will be used to form a trust fund that will finance the development of more renewables capacity. Phase 1 of the project cut greenhouse gas emissions by 45,530 tons and saved 116,644,000 kWh.

For more information
- Steven Walter, Assistant Commissioner
- Energy Management and Policy
- 312.744.4106
- swalter@cityofchicago.org

Mayor Will Wynn and the **Austin, Texas** City Council have adopted a resolution that commits Austin to developing a greener transportation system. Part of this plan is to replace existing city fleet vehicles with plug-in hybrids. Mayor Wynn has been a leader in advocating that cities across the United States purchase Plug-In Hybrid Vehicles (PHVs) for city fleets. PHVs have drive trains similar to traditional hybrid vehicles, utilizing power from two sources: a battery pack and internal combustion engine. The primary difference between PHVs and hybrids currently available to consumers is that the battery pack in a PHV is expanded and modified to allow the input of electrical energy from standard 110/220V outlets. The larger battery capacity allows PHVs to be driven 20–80 miles on electrical charge alone, and then seamlessly transition to traditional hybrid operation when the charge in the battery is depleted. Thus, PHVs allow for clean, emission-free driving on short trips, but have a travel range equal to any traditional car (300–400 mi).

In 2005, Mayor Wynn introduced a resolution to the Austin City Council to adopt an incentive-based PHEV program. The hybrids will be powered using wind turbines owned by West Texas Wind. Mayor Wynn is pushing for the 50 largest cities in the United States to join Austin in this initiative, which includes a commitment to purchase the vehicles when they become available.

For more information
- Lisa Braithwaite
- Austin Energy
- 512.322.6511
- pluginaustin@austinenergy.com

Create High-Performance Buildings

6 Building Operations & Maintenance

Constructing buildings in a sustainable manner is just one component to building a high-performance city. Building operations—how a building is run day-to-day—have a large impact on energy use and the environment. Heating and cooling systems, for example, are critical to the comfort of occupants, but operating these systems inefficiently can cause massive energy waste and high energy costs—as an example, the University of Buffalo estimates that each degree of overheating or overcooling costs them $100,000 per year in unnecessary energy use.[14]

Cities should pursue implementation of a performance standard such as the United States Green Building Council's existing building standard, or LEED–EB, for all city-owned and leased buildings. These sustainable building-operations guidelines capture both a building's physical systems (equipment, design, land use, etc.) and the ways the building is occupied and operated by its managers (waste management, temperature monitoring, commuting programs, etc.).

Information Technology

One of the major hidden costs of new technology is increased energy consumption. A typical personal computer left in continuous operation costs about $120 per year. However, when systems power down during evening and weekend hours, the operating cost drops to $20 annually.[15] Cities can do several things to reduce the energy footprint of their technology. They can purchase efficient, Energy Star computers, printers, and other equipment; they can make sure that all units power down, or "sleep," when not in use; and they can encourage energy-saving behavior in computer users.

Conservation

One of the most cost-effective ways cities can reduce energy use is through basic conservation and efficiency, such as turning off the lights when no one is in an office or building. Many cities have come up with public awareness programs to encourage efficient behavior among employees. Cities can also establish friendly competitions between departments or buildings to encourage energy conservation. Another inventive for conservation is to allow some or all of the energy savings to be paid back to the participating departments.

What Cities are Doing Now

In 2001, **San Diego, California** launched a year-round Energy Conservation Action Plan, in which the city asked its employees to reduce the number of appliances they use, and turn off or unplug appliances and other electronic devices when not in use. In fiscal year 2001–02, the City's overall energy costs were reduced by 13 percent. The city also had VendingMiser devices installed on 183 Pepsi vending machines at various city facilities. This energy efficient measure is projected to provide the city with approximately $55,000 annually in energy savings.

For more information

- Energy Conservation & Management Division
- Environmental Services Department
- 858.694.7000
- energy@sandiego.gov
- http://genesis.sannet.gov/infospc/templates/esd/index.jsp

When **Atlanta, Georgia** first examined its energy use in 2002, it found a few surprises. For example, City Hall used as much energy in the middle of the night as it did in the middle of the afternoon. After the audit, the city created an Energy Stars Employee Conservation Program to encourage employees to turn off lights, computers and other equipment when not in use. The program relies on energy coordinators in each city department, who take responsibility for conservation in that department. Thanks to the hard work and conservation efforts of these employee energy coordinators, the city exceeded savings expectations by $22,000 in 2003.

For more information

- Ben Taube, Environmental Manager
- 404.330.6752
- btaube@atlantaga.gov

7 Innovative Approaches to Utilities

One key way that cities can promote energy efficiency and renewable energy is by developing innovative approaches to utility regulation and management. Cities that actually own their own utilities are clearly in the best position to affect utility practices; however, even cities that contract with utilities may be able to pass local policy that makes renewable energy and efficiency projects easier within city limits.

Many of the policies listed here make sense only for cities that own and control their own utilities. Creating a municipal utility allows cities to directly manage electricity and natural gas services, to offer programs that encourage energy efficiency and renewable energy production and use, and to set aside a portion of ratepayer funds for innovative energy projects.

An example of a municipal utility that is working hard to provide efficient, clean energy solutions to city residents is Austin Energy in Austin, Texas. Austin Energy is a department of the city of Austin. The utility's projects range from emissions reduction programs at its power plants to solar rebate, solar loan, and green building incentive programs for its customers. Austin Energy also tries to reduce its employee's commute times—and their impact on the environment—by allowing workers flexible work schedules, such as allowing them to work from home one day a week, or to compress their work weeks to four 10-hour days. The utility also leads the way in its support of plug-in hybrid vehicles.[16]

Demand Side Management

Demand Side Management (DSM) is the umbrella term for any utility-administered program aimed at reducing or modifying consumer energy demand. DSM programs take many forms. For instance, a utility might provide cash rebates for consumers who buy energy efficient appliances or efficient lighting, or might perform free energy audits to highlight improvement opportunities in residential and commercial properties. Additionally, some utilities save energy and improve reliability by shifting the inessential portion of a customer's power consumption from peak hours to off peak hours. This has a smoothing effect on the peaks and troughs in daily energy patterns, and offsets the need for inefficient "peaker" plants which run only during periods of extremely high demand.

What Utilities are Doing Now

Each winter, **Pacific Gas and Electric** offers a 20 percent rebate to customers who reduce their cumulative natural gas consumption by ten percent between January and March. A report in March 20, 2006 showed that 53 percent of PG&E customers reduced their gas use during January and February in order to take advantage of the rebate. PG&E's rebate program encourages consumers to develop an instinct for conservation through simple habits such as lowering the thermostat, and reduces utility costs and emissions at the same time.

For more information

- PG&E Energy Savings Programs
- 800.933.9555
- http://www.pge.com/news/latest_topics/wintersavings/

To manage intense cooling demand during the desert summer, **Nevada Power** offers a portfolio of end use efficiency programs. For instance, the utility provides cash rebates for Energy Star appliances and efficient (SEER 13) air conditioners. It also hosts the Cool Credit Program, in which the utility installs a receiver on residential air conditioner units that allows them to be turned off during summer peaks. This option makes sense for the many consumers who are not home during prime cooling hours. In return, customers receive up to $60 per month in credit toward their utility bills.

For more information

- Nevada Power
- Conservation Programs
- 702.367.5000
- http://www.nevadapower.com/conservation/residential/programs/

7 Innovative Approaches to Utilities cont...

Green Pricing Programs

"Green pricing" programs allow utility customers to voluntarily choose renewable energy as part of their energy mix. Customers opting into these programs pay a premium rate on their utility bills to account for the higher cost of renewable energy. This price premium is based on the difference between fossil fuel costs and renewable energy costs. In some regions the rate disparity has declined significantly due to rising fossil fuel prices. At this time more than 600 utilities offer green pricing programs. Since 2004, customer participation in green pricing programs nationwide has grown by 20 percent to 430,000 customers. In the same time period utilities have increased their green energy production by 36 percent to 2.7 billion kWh.

Green pricing programs give consumers the ability to directly buy renewable energy without producing the energy themselves. These programs also allow utilities to invest in clean energy at times when it is not as cost-effective as fossil fuel energy. In the long term, green pricing helps utilities build crucial renewable energy infrastructure.

What Utilities are Doing Now

Measured by renewable energy output, **Austin Energy**—a municipal utility run by **Austin, Texas**—has the nation's leading green pricing program, generating over 435 million kWh of renewable energy annually. The GreenChoice program applies varying renewable energy rates based on the year a customer subscribes. For customers who subscribed in 2000, the rate is $.017 per kilowatt hour; for customers who subscribed in 2005, the rate is $.035 per kilowatt hour. This approach is unusual because it provides long term fixed rates for renewable energy while the utility's fossil fuel rates remain variable. This has become a strategic advantage to manufacturers. In 2001, IBM subscribed to the program and anticipated spending $30,000 on the rate premium. Later that year, however, natural gas prices spiked. As a result, IBM saved $20,000. Since then, fossil prices have continued to rise. In 2004, IBM anticipated that GreenChoice would save the company $60,000.[17]

For more information
- Ed Clark
- Austin Energy Green Choice Program
- 512.322.6514
- green.choice@austinenergy.com
- http://www.austinenergy.com/

Measured by customer enrollment, **Xcel Energy** offers the most successful green pricing program, with 49,354 participants. High enrollment can be partially attributed to the favorable green pricing rate, as Xcel offers the nation's cheapest renewable energy program. As of December 2005, renewable energy was actually 67 cents/kWh below fossil fuel rates. The program is also impressive in its generation rates, with over 147 million kWh of annual production.

For more information
- Xcel Energy
- Product Sales and Information
- 800.824.1688
- http://www.xcelenergy.com/

7 Innovative Approaches to Utilities cont...

Public Benefits Funds

Better known as a state strategy, Public Benefits Funds (PBF) can also be implemented by cities through their municipal utilities. PBFs are funds generated by levying a small surcharge on consumer electricity usage. The surcharge is typically based on energy consumption, though some states (e.g. Pennsylvania) charge a flat monthly fee. The money collected in a these funds typically supports a range of energy programs, including weatherization efforts, rebate programs, renewable energy research and development, retrofit incentive programs and energy bill assistance for low-income consumers. Studies indicate PBFs have positive effects on a state's economy—each $1 spent from the fund leverages roughly $3 in related business and consumer investment.[18]

What Utilities are Doing Now

In **Sacramento, California** the **Sacramento Municipal Utility District** (SMUD) offers customers the opportunity to add a monthly tax-deductible contribution to their utility bills each month. The contributions are aggregated into a fund used to provide low-income customers with financial assistance in paying overdue bills. Since 1996, SMUD customers contributed nearly $500,000 to the fund.

SMUD also puts aside a percent of ratepayer dollars for its Energy Assistance Program Rate (EAPR), which allows low-income customers to save up to 30 percent on their bills, and for its Residential Weatherization Program, which allows qualified low-income customers to have their homes weatherized at no cost.

For more information

- Sacramento Municipal Utility District
- 888.742.7683
- http://www.smud.org/

7 Innovative Approaches to Utilities cont...

Decoupling

Under current pricing schemes, utility companies generate more profit when they sell more units of energy, and thus they have little incentive to promote efficiency or the use of renewable energy systems. Realizing this, several states have severed the link between utility profits and sales quantity. This regulatory approach, called "decoupling," indexes retail rates to sales volume. If volume drops because of energy conservation, rates are adjusted upwards. If volume increases and that increase was preventable, rates are adjusted downward. By holding utility profits constant irrespective of sales, volume becomes irrelevant. While this approach neutralizes the disincentive towards energy efficiency, it does not by itself create an incentive; for this reason, municipally-owned utilities should consider adopting positive energy efficiency measures (such as DSM programs) as well.

What Cities are Doing Now

In **Alachua County, Florida**, the Alachua County Environmental Protection Advisory Committee (EPAC) recently presented a report to the Alachua County Commission, recommending among other things that the city of **Gainesville, Florida** decouple its consumer-owned utility profits from sales to maximize energy efficiency. EPAC recommended the following steps be taken to accomplish decoupling at the local level:

Here are the essential steps [when implementing decoupling policy at the local level]:

1. At regular intervals, the city decides how much income it should receive from the utility. The utility also decides how much income it needs to cover its fixed costs, including additions to reserves for emergencies, loan repayments, and contributions to various utility contingency funds it maintains.
2. Rates are set in the usual way, using forecast of sales of different kinds together with the total revenue needs decided in step 1 above to determine the total income and the per unit rates to be charged to each kind of customer.
3. Periodically, income from sales is reviewed to see whether the utility has collected more than it needs, or less. If it has collected more, rates are reduced and the extra income is returned to ratepayers. If it has collected less than it needs, rates are increased slightly to make up the needed difference. This process is called a "true-up", and it is routinely performed by electric cooperatives, which collect no profits from their ratepayers.

The report also notes that extra income could be used in whole or in part to fund energy efficiency and DSM programs.

For more information

- Rob Brinkman, Chair
- EPAC
- 352.264.6800

Policy link

- SEPAC's report, "Review of the Gainesville Regional Utilities' Proposal for a New Coal-Fired Power Plant," is available at: http://environment.alachua-county.org/Natural_Resources/EPAC/EPAC_Review_of_Coal_Power_Plant.pdf

7 Innovative Approaches to Utilities cont...

What States are Doing Now

In 1998, the **Oregon Public Utilities Commission** adopted a performance-based ratemaking tariff for PacifiCorp's electricity distribution functions. The plan applies a "revenue cap" to each customer class (industrial, commercial, residential, etc.). If actual sales revenues exceed the predetermined cap in any of the classes, the extra is set aside in a balancing account. The following year, the balancing account funds are given back to the utility if sales were lower than projected, and given back to customers if utility sales were higher than projected. In this way, the utility's revenues are disconnected from the amount of electricity it distributes, eliminating any reason to discourage customer generation or energy conservation efforts. Recently, the Oregon PUC adopted a similar structure to decouple revenues from volumetric sales for Northwest Natural Gas Company.

For more information

- Administrative Hearings Division
- Oregon Public Utility Commission
- 503.378.6678
- http://www.oregon.gov/PUC/

Policy links

- OR PUC order 98–191 (PacificCorp): http://apps.puc.state.or.us/orders/1998ords/98-191.pdf
- OR PUC order 02–634 (Northwest Natural Gas): http://apps.puc.state.or.us/orders/2002ords/02-634.pdf

7 Innovative Approaches to Utilities cont...

RPS/Feed-In Tariffs

Renewable Portfolio Standards and Feed-In Tariffs are tools cities can use to require utilities operating within city limits to increase their use of renewable energy sources over time, thus creating a stable market for renewable energy in the region. In addition to reducing pollution, these laws decrease cities' dependence on potentially unreliable sources of fossil fuels and can create good jobs in renewable energy system installation, operating and maintenance, and in laying utility lines to these new systems.

An RPS works by setting the minimum amount of renewable energy that must be developed by retail electricity vendors each year. The amount increases over time, steadily decreasing a state's dependence on traditional energy sources while simultaneously building a renewable energy infrastructure. This system creates a guaranteed market for renewable energy in a particular location.

Feed-In Tariffs, used more commonly in Europe, are small tariffs levied on conventional power producers in a particular region. Funds from these tariffs are then used to pay above-market rates to renewable power producers in the same region. This system provides a stable price point for renewable energy generators, and lowers their risk to entering the energy market.

What Cities are Doing Now (RPS)

In 2004, with 78 percent of the vote, the citizens of **Columbia, Missouri** overwhelmingly approved a "Renewable Energy Standard" for the city. The measure requires that the city's municipal utility obtain two percent of its power from renewable energy sources, like wind and solar power, by 2007; the percent ramps up to 15 percent by 2022.

For more information

- Columbia Water & Light Authority
- 573.874.7325

Policy link

- Columbia's Renewable Energy Standard, Columbia Code of Ordinances §27–106: http://www.dsireusa.org/documents/Incentives/MO04R.htm.

What Cities are Doing Now (Feed-In Tariff)

Feed-In Tariffs have not yet found favor in the United States; however, several foreign countries have embraced this policy as the best way to bring smaller renewable energy producers into the energy market. Most recently, the **Province of Ontario, Canada** announced in March 2006 that the provincial government will set a standard price for renewable power from small producers: 11 cents CDN/kWh for wind, biomass, and small hydro power, and 42 cents CDN/kWh for solar. The program is expected to enable farmers, communities, and native Canadian populations to produce renewable energy competitively with large developers, and to dramatically expand renewable energy production throughout the province.

For more information

- Ontario Sustainable Energy Association
- 416.977.4441
- info@ontario-sea.org
- http://www.ontario-sea.org/ARTs/ARTsList.html

7 Innovative Approaches to Utilities cont...

Community Choice Aggregation

Community Choice Aggregation (CCA) allows city governments—or regional entities acting for multiple cities—to act on behalf of all their residents in negotiations with utilities. In this system, cities act as intermediaries between ratepayers and utilities, negotiating bulk power rates for entire cities instead of allowing utilities to set individual rates for each customer. To improve participation rates, some areas have experimented with opt-out CCA programs, giving customers have a window of opportunity to decide not to enroll in the program; if no action is taken, they are automatically enrolled. Opt-out programs have the advantage of lower marketing costs.

CCA vests the community with greater control over generating resources. The city, acting as aggregator, can leverage its bargaining power to pursue a cleaner portfolio mix including renewable energy and efficiency programs.

What Cities are Doing Now

The **San Diego Apollo Alliance** has been working hard to implement CCA in **Chula Vista, California**. Chula Vista is one of two cities in the state that has passed an ordinance to implement CCA. Residents of San Diego County are paying some of the highest electricity rates in the nation and the highest in California. With CCA, Chula Vista can use the combined buying power of its residents to negotiate for more affordable power, to create a critical market for clean power and to retain local control of their energy supply. In order to implement CCA, Chula Vista must now negotiate a binding agreement with San Diego Gas and Electric, the city's current energy provider.

For more information
- Jennifer Badgely
- San Diego Apollo Alliance
- info@sdapollo.org

The **Northeast Ohio Public Energy Council** is the aggregator for Ohio's multi-city CCA program. NOPEC represents 94 communities spanning eight counties and 400,000 customers. NOPEC, after an open bid process, selected clean energy leader Green Mountain Energy as its utility provider. Their contract calls for two percent of the area's energy supply to come from qualified renewable resources; the other 98 percent must come from natural gas or a fuel with an equal or lesser emissions profile. In addition, the agreement calls for ten MW of new wind and 100 kW of new solar within Ohio. The contract is expected to save $10 million over its duration.

For more information
- NOPEC
- 866.579.9487
- www.nopecinfo.org

Drive toward Energy Independence

Cities that are serious about energy independence and ending global warming must take a hard look at transportation fuels and vehicles. The United States has only three percent of the world's oil reserves, but accounts for over 25 percent of global demand for oil—and demand keeps growing.[19] Luckily, cities are in a good position to stem this tide through serious changes in fuel consumption and vehicle use. Many cities have direct control over city fleet vehicles, city buses, school buses, and many other transit vehicles. Even where cities do not own their transit systems, they have bargaining power through the lucrative, sought-after contracts with the companies that do own these systems. And cities can offer incentives to private vehicle owners to encourage them to drive smarter and more efficiently.

Besides moving cities away from complete dependence on imported oil, switching to renewable fuels and high-technology vehicles is a good regional economic development strategy. The rural areas surrounding cities can often be the direct source for fuels such as ethanol and biodiesel. Community- or cooperatively-owned production facilities can bring dollars into those rural areas; at the same time, existing vehicle manufacturing facilities—often located in or near cities—can be upgraded and retooled to produce new generation cars and trucks that run on renewable fuel or renewable energy. In addition, cities can leverage the fuel needs of their fleets to encourage fueling stations to provide biofuels and biofuel blends. These strategies create jobs, improve air and water quality, and make cities healthier and more independent.

1 Clean and Efficient City Fleets

Cities and counties own large numbers of vehicles for use by public employees. Historically, efficiency and environmental impact have not been large considerations in these vehicles' purchase; however, some governments have begun taking steps to ensure that these vehicles operate more efficiently and cleanly. There are several options to make city fleets more efficient and environmentally friendly, the easiest of which is simply altering purchasing guidelines to favor the most fuel efficient vehicles available. Other options include:

- Purchasing alternative fuel vehicles like regular and plug-in hybrids, and vehicles that run on ethanol, biodiesel or compressed natural gas.
- Running vehicles on alternative fuels wherever possible. Existing diesel vehicles—including many school buses and trucks—can easily be converted to run on biodiesel, and some fleets may already include flex-fuel vehicles that can run on up to 85 percent ethanol.

What Cities are Doing Now

In 2005, Mayor Thomas M. Menino of **Boston, Massachusetts** traded in his SUV for a more fuel efficient vehicle and announced that all new vehicles purchased by the city will be alternative fuel source vehicles. The city will also convert its entire diesel fleet to run on biodiesel.

For more information

- Bryan Glascock
- Environment Department
- 617.635.3850
- Environment@cityofboston.gov
- www.cityofboston.gov/environment

The **New York City, New York** Alternative Fuels Program is working to replace New York City's public fleets with alternative fuel vehicles in order to promote and expand usage of alternative fuels. This effort began in 1993 with the conversion of 385 New York City municipal fleet vehicles to compressed natural gas (the New York City Fire Department prohibits use of any other type of natural gas in the city). Since that time, the Alternative Fuels Program has expanded significantly: there are now over 6,000 alternative fuel vehicles on New York City streets. The vehicles are a mixture of natural gas, hybrid, E85 (ethanol), and electric. New York City operates one of the largest municipal electric vehicle (EV) fleets (over 70 EVs) and one of the largest hybrid fleets (452 Toyota Priuses). As a result of this program, the city has reduced its fuel consumption by close to 283,906 litres a year and avoided emissions of an estimated 1,112 tons carbon dioxide, 1,581 kg nitrogen oxides, 2,930 kg carbon monoxide, and 550 kg volatile organic compounds per year.

For more information

- Office of Environmental Coordination
- 212.788.9956
- http://www.nyc.gov/html/dot/html/motorist/alternativefuel.html

1 Clean and Efficient City Fleets cont...

Seattle, Washington's city fleet of 3,250 vehicles uses 2.4 million gallons of gasoline and diesel each year. In 1992, the city changed its fleet purchase priorities to cut down on air pollution and improve fuel efficiency. The fleet now contains over 200 hybrid, electric and compressed natural gas vehicles, and at least half the compact cars purchased each year either run on alternative fuels or get at least 45 mpg. In 2001, the entire diesel fleet was converted to ultra-low sulfur diesel, and all heavy diesel trucks were retrofitted with pollution control devices. The new diesel fleet also uses a 20 percent biodiesel blend known as B20. The city has also downsized its fleet by at least 200 vehicles, in some cases replacing them with personal mobility vehicles (Segways™) for jobs like water meter reading. Segways™ have zero emissions, cost $3/year to recharge and, in some cases, replace the use of a car.

Seattle is going even farther: on Earth Day 2003, the Mayor and City Council set a long term goal of having a 100 percent clean and green fleet. This year, the Office of Sustainability and Environment will complete a life cycle benefit cost analysis to determine the best mix of fuels and vehicles and the appropriate timeline for meeting the goal. At the same time, the city is launching an employee education campaign to encourage reduced vehicle idling and remind employees to consider alternatives to single driver travel, such as like teleconferencing and car pooling to meetings.

For more information

- Office of Sustainability & Environment
- 206.615.0817
- ose@seattle.gov
- http://www.ci.seattle.wa.us/environment/clean_air.htm

The **Medford, Massachusetts** climate action plan, adopted in October, 2001 states:

> Whereas the City of Medford is committed to reducing its emissions of greenhouse gases and reducing air pollution, the City should require that all new vehicles purchased by the City for municipal use, be the most fuel-efficient vehicle in the class required for the job. Additionally, current vehicles in every department shall be evaluated to determine if the size and the fuel type of the vehicles are appropriate based on the frequency and the type of usage. Where feasible, the City of Medford should purchase smaller vehicles for each department.

For more information

- Energy and Environment Office
- 781.393.2137

2 Clean and Efficient Private Fleets

Cities can also encourage private companies to green their own fleets through grants, rebates, and other incentives.

What Cities are Doing Now

The **New York City, New York** Private Fleet Alternative Fuel/Electric Vehicle Program, administered by New York State's public benefits program (NYSERDA) in cooperation with New York City Clean Cities, helps New York City's private companies acquire Alternative Fuel Vehicles (AVFs). Participants in the program receive funds up to 50 percent of the incremental cost of purchasing new light-duty vehicles that operate on natural gas or electricity, and up to 80 percent of the incremental cost of purchasing new (or converting to) medium and heavy-duty compressed natural gas (CNG), electric, or hybrid electric vehicles. Eligible projects may also include installation costs for the infrastructure needed to fuel the vehicles.

For more information

- Lou Calcagno, Clean Cities Coordinator
- New York City Clean Cities Coalition
- 212.487.6820
- lcalcagno@dot.nyc.gov
- http://www.nyserda.org/Programs/transportation/AFV/NYCPrivateFleet.asp

New York City is also greening its cabs. A program run through NYSERDA, the Clean Fuel Taxi Program, provides up to $8,500 towards the purchase of new (or conversion to) compressed natural gas (CNG) taxis. About 300 CNG cabs are now in operation because of this program. Natural gas is available at a number of fueling stations across the city.

At the same time, the New York City Council recently passed legislation requiring the city's Taxi and Limousine Commission to approve at least one model of hybrid car for use as a New York taxicab (seven models have now been approved). Because each New York cab is estimated to drive 100,000 miles per year, drivers are expected to recoup the extra cost of the hybrid models within the first year of operation.

For more information

- Joseph Littmann, Jr., Manager
- NYC Regional Office
- NYSERDA
- 212.971.5342 ext. 3003
- http://www.nyserda.org/Programs/transportation/AFV/NYCFuelTaxi.asp
- Todd Sigaty
- Coalition Advocating for Smart Transportation (CAST)
- 917.621.7167
- http://www.smarttransportation.org/

Policy link

- New York City "Clean Air Taxis Act" (NYC Administrative Code Chapter 19–533) can be found at: http://public.leginfo.state.ny.us/menugetf.cgi

3 Incentives for Efficient Car Use

Private automobiles are a vital part of the American economy. At the same time, there is no question that reducing our dependence on foreign oil requires us to reduce the amount of gasoline we use in our cars. Though city governments have direct control only over their own fleets, they can play a big role in encouraging residents to make efficient car purchases and use their vehicles more sustainably. The federal government and some state governments are now offering tax breaks or other incentives for consumers who choose efficient, hybrid or alternative fuel vehicles. City strategies include exemption from sales taxes, discounts on toll roads and parking, and access to HOV lanes.

There are many ways cities can provide transportation options and choices to their employees, including mass transit, shuttle buses, carpooling and vanpooling systems, bicycle and pedestrian infrastructure, and incentives related to all of the above. Programs that make it easier and safer to walk, bike and use mass transit include land use planning that sites housing near workplaces; adequate lighting; dedicated bike paths; adequate bike racks; and free or low cost transit passes. Programs that promote less car use include preferential parking for carpools and for efficient vehicles and carsharing services. Cities can and should also provide incentives to use alternative transportation, including financial incentives (such as discounts on bike maintenance or coupons to local eateries), choice based programs (such as allowing employees to choose a parking permit or a free bus pass, but not both), and preferential treatment (such as premium parking spots for carpools).

What Cities are Doing Now

Berkeley, California contracted with a car sharing company to replace 15 of its older fleet vehicles with five hybrid carshare cars. City employees have exclusive access to those five cars during business hours, but during the evenings and weekend any member of the car sharing organization may reserve one of the cars for their own use. The innovative partnership saves Berkeley taxpayers hundreds of thousands of dollars and provides access to an alternative to car ownership for Berkeley residents.

For more information
- Office of the Mayor
- 510.981.7100

Austin, Texas offers $100 in free parking for residents who drive hybrids that meet the EPA's Green Vehicle Guide. The city issues pre-paid credit cards for any of the city's 3700 parking meters to drivers who register their clean hybrids with the city.

For more information
- Matt Curtis, Aide to Mayor Will Wynn
- 512.680.2509

Madison, Wisconsin's Employee Bikes at Work Program was created to provide city of Madison employees with bicycles for use as part of the transportation fleet during working hours. The city presently has five bicycles, which are available on a first come, first serve basis. Helmets, locks, and keys are also provided.

For more information
- Arthur D. Ross, Pedestrian-Bicycle Coordinator
- 608.266.6225
- aross@cityofmadison.com

In 1992, the California Assembly enacted a Parking Cash-Out law. The law applies to employers of 50 or more located within a non-attainment area who do not own parking space, but subsidize the cost of their employee parking. These employers must offer employees the opportunity to "cash out", or receive the cash value of the subsidy, instead of the parking space. **Santa Monica, California** is located within an ozone non-attainment area and enforces this law through its Transportation Management Plan ordinance. Currently, nearly 33 percent of all Santa Monica employers with 100 or more employees, and ten percent of employers with 50–99, operate a Parking Cash-Out program.

For more information
- Jacquilyne Brooks de Camarillo, Transportation Management Specialist
- 310.458.8956

4 Improving Mass Transit

Mass transit is at the heart of any smart growth policy, because it allows people to get from home to work in the most efficient, least environmentally-harmful way possible. Mass transit in the form of buses or rail can save energy, reduce pollution, reduce the need for parking, alleviate congestion, and provide economical transportation alternatives. In many congested inner cities using mass transit is also faster than driving a car. Cities can invest in mass transit by diverting federal transportation dollars to buses, light rail systems, and—on a more regional scale—inter-city rail. One public transit system, bus rapid transit, has proven to be both cost efficient and popular with riders. In these systems, buses run on a dedicated lane separated from traffic, with its own timed traffic signals. Allowing buses to bypass car traffic congestion dramatically speeds up bus travel, and makes buses highly competitive with private cars for commuters.

Cities can also run buses, the predominant form of mass transit in the United States, on biodiesel. Local governments might even consider starting a citywide waste vegetable oil collection service to run the buses.

What Cities are Doing Now

The regional transit authority for **Cleveland, Ohio** is constructing exclusive bus lanes that connect the city's center to the residential east side. The 5.2 mile line runs through a formerly grand Cleveland neighborhood that has slipped into decline; planners anticipate the bus system acting as an economic catalyst for this area.

For more information

- Cleveland Regional Transit Authority
- Euclid Corridor Transportation Project
- 216.771.4144
- www.euclidtransit.org/home.asp

In 2000, **Cincinnati, Ohio** switched 288 buses to a 20 percent biodiesel blend. In doing so, the city improved air quality and reduced dependence on foreign oil. In 2005, the city upped the blend to 50 percent April through October. This increase will make the Cincinnati Metro one of the largest biodiesel users in the nation, consuming about 1.3 million gallons a year. Budget is the primary reason for this aggressive use of the alternative fuel—Metro's 390 buses use about 3.6 million gallons of fuel per year. The biodiesel is manufactured locally from Ohio soybeans and the city saves about $1 for every gallon of biodiesel purchased through an arrangement with its local fuel supplier.

For more information

- Sallie Hilvers
- Cincinnati Metro
- 513.632.7681

5 Upgrading Traffic Signals and Street Lights

There are literally billions of traffic signals owned and operated by local governments in the United States These run twenty-four hours a day and consume a significant amount of energy. Historically these signals have used incandescent bulbs, but recently states and cities have taken the initiative and begun replacing incandescent signals with more efficient light-emitting diode (LED) signals, which use 90 percent less power, last ten times longer, and appear brighter than traditional incandescent bulbs.

What Cities are Doing Now

Denver, Colorado was a pioneer in the use of LED traffic signals and continues to have the largest LED traffic signal inventory in the United States, saving nearly $800,000 annually in energy, materials and labor costs. In terms of emissions reduction and public health, this program reduces pollutants by an amount equivalent to the effects of planting more than 777 acres of trees or the permanent removal of 371 automobiles from local roads.

For more information
- Beth Conover, Advisor to the Mayor
- 720.865.9090
- beth.conover@ci.denver.co.us

Passaic, New Jersey partnered with a private company call Public Energy Systems to replace the incandescent traffic signals at 40 city intersections. By installing LED signals at these locations, Passaic will save over $65,000 annually in energy and maintenance costs.

For more information
- Robert Lesch
- Public Energy Solutions
- 866.818.1900 ext. 102
- www.publicenergysolutions.com

Saint Paul, Minnesota, was the first local government in the state to install LED traffic signals in all colors—red, green, yellow and white. By using state joint power purchasing agreements, St. Paul kept project costs very low.

For more information
- John Maczko
- Department of Public Works
- 651.487.7206

6 Green Infrastructure

One of the best way cities can help improve their air quality and dependence on foreign oil is to begin building the infrastructure that supports privately-owned biofueled vehicles. A city's residents are unlikely to seek out and purchase alternative-fueled vehicles if they are unsure where they'll be able to fill them up.

Cities can help owners of fueling stations access state and federal funding to help them convert existing pumps to dispense E85, or build new E85 pumps. In addition, cities are exploring the idea of becoming biodiesel producers, with innovating partnerships that collect waste vegetable oil and process it into biodiesel.[20]

What Cities Counties are Doing Now

The office of **Salt Lake City, Utah** Mayor Ross C. Anderson provides salary and operation funds for Utah Clean Cities Coalition in conjunction with the Utah Energy Office. The Utah Clean Cities Coalition competes for federal funds to support local clean fuel projects, including the construction of alternative fuel infrastructure.

For more information

- Beverly J. Miller, Director
- Utah Clean Cities
- 801.535.7736
- beverly.miller@slcgov.com

Mayor James Brainard helped secure construction of the first E85 pump in **Carmel, Indiana**.[21] Faced with declining air quality and EPA non-attainment status that restricts federal highway funds, Mayor Brainard issued an executive order requiring that all newly purchased city vehicles be alternative fuel-compatible, and met with local fuel station owners to encourage them to add E85 pumps.

For more information

- Office of Mayor Jim Brainard
- 317.571.2401
- jbrainard@carmel.in.gov

Hamilton County and the city of **Cincinnati, Ohio** are working together to plan a pilot project that would collect waste vegetable oil from local businesses and convert it to biodiesel for use in city and county vehicles. While the project is still in development, it could provide a low-cost, environmentally-friendly fuel for the city and county, while reducing waste.[22]

For more information

- Deborah Holston, Assistant City Manager
- 513.352.5335
- deborah.holston@cincinnati-oh.gov
- Todd Portune, Hamilton County Commissioner
- 513.946.4401
- todd.portune@hamilton-co.org

Policy link

- Minutes from Hamilton Solid Waste Management District Policy Committee Meeting: http://www.hcdoes.org/sw/Policy/november%2010/090105Minutes.pdf

Build High-Performance Cities

As more and more Americans move to cities and suburbs, local governments are faced with the challenge of managing future growth in a way that is environmentally and economically smart. Many of the activities associated with urban growth—new construction, road-building, expansion into former agricultural land—rely on enormous amounts of electricity and fuel. Cities are stuck with the utility bills of many of these buildings and roads for years into the future.

City and town governments that are forward-thinking about future growth can ensure that their ecological footprint is smaller, and their utility bills lower, than if they simply sat back to watch urbanization happen around them. They can also provide their residents with thousands of jobs as they construct smarter urban spaces and transit systems. To this end, many cities have incorporated "smart growth" policies that rely on redeveloping and retrofitting existing buildings and infrastructure, giving incentives for residents to live near transit and jobs, and preserving open space. These policies are truly energy-saving, in they ensure that residents live closer to jobs and transit hubs, and that rural areas are protected from overdevelopment.

What Cities are Doing Now

The best overall model for Smart Growth planning at the local level is **Portland, Oregon**. Portland's elected regional government entity, Metro, has passed a comprehensive long-term plan (the 2040 Growth Concept) that calls for efficient land use, farm and forest land protection, a balanced transportation system, a healthy economy, and diverse housing options for the region. Metro also manages the city's existing urban growth boundary, and has instituted a plan to develop a series of interconnected parks and open spaces within the city.

Recently, Metro proposed a $227 million bond package designed to preserve natural areas and protect water resources at the regional, local, and neighborhood level. The bond would be financed by a small property tax assessment of $30 per household per year.

For more information

- Metro Land-Use Planning
- 503.797.1939
- 2040@metro-region.org
- www.metro-region.org

Another city that has emerged as a leader on large-scale commitments to smarter growth and better energy planning is **Seattle, Washington**. In early 2005, Seattle Mayor Nickels started a campaign to get cities across the country to commit to reducing their greenhouse gas emissions by 7 percent below 1990 levels by 2012. Since then, over 230 mayors—plus the U.S. Conference of Mayors—have signed onto the campaign, known as the U.S. Mayors Climate Protection Agreement.

At the same time he launched this campaign, Mayor Nickels appointed a Green Ribbon Commission on Climate Protection to develop local policies to help reach the 7 percent goal. The Commission's report, released in March 2006, identifies a comprehensive suite of key policies for the city, including investments in public transit and bicycle options, channeling development dollars toward high-density, transit-friendly projects, and increasing fuel and energy efficiency throughout the city.

For more information

- Steve Nicholas, Director
- Office of Sustainability & Environment
- 206.615.0829
- steve.nicholas@seattle.gov

Policy Links

- Home page for the U.S. Climate Protection Agreement: http://www.ci.seattle.wa.us/mayor/climate/
- Report and Recommendations from the Green Ribbon Commission: http://www9.seattle.gov/climate/PDF/SeattleaClimateReport.pdf

Build High-Performance Cities

1 Rehab Building Codes

One of the most important ways that cities can lower pollution levels and energy bills is to invest in rehabilitation and retrofitting existing neighborhoods rather than abandoning these areas and moving outward. Cities can help make it cost-effective for developers to invest in rehab projects by implementing progressive building codes that set different standards for rehabilitation projects than for costly new construction. Over the past ten years, a number of cities have added such "rehab codes" to their building codes, resulting in significant inner-city redevelopment.

The Apollo Alliance supports rehab codes that lower the bar to inner-city renovation projects, and that also provide incentives (such as shortened permit schedules) for projects that adhere to IECC standards for energy efficiency, or LEED standards for green building. (See "Create High-Performance Buildings" section.)

What Cities are Doing Now

In 2001, **Wichita, Kansas** passed the Wichita Existing Buildings Rehabilitation and Change of Use Code, which provides a consistent set of regulations for rehabilitation and redevelopment of existing buildings. Before the code was enacted, rehab projects were regulated at the discretion of the city's building inspection department, making the permitting process lengthy, costly, and confusing for developers. An example of a project built under the code is the Harvester Lofts in downtown Wichita, built in a vacant 1914 warehouse. The project is successful from both an energy-efficiency and an equity perspective: thirty of the 48 total units are affordable to Wichita residents making less than 60 percent of Area Median Income. Altogether, in the two years after the code went into effect, the city saw 182 downtown renovation and construction projects, accounting for over $38 million in economic activity in Wichita's center city.

For more information

- Wichita Office of Central Inspection
- 316.268.4460
- Gary Hassenflu, President
- Garrison Development Company (Developer of Harvester Lofts project)
- 913.362.9816

Policy links

- IBEC (ICC's International Existing Building Code): http://www.iccsafe.org/e/prodshow.html?prodid=3551CD03 (available for purchase).
- Excel spreadsheet of IBEC adoption by state and/or local governments: http://www.iccsafe.org/government/state-local.html

Seattle, Washington just passed an amendment to its Land Use Code that allows a developer to build at a higher density than is normally allowed under the code, so long as the developer can certify that the building will be rated LEED Silver or its equivalent. The amendment applies only to buildings in downtown commercial districts.

For more information

- Rebecca Herzfeld, Council Central Staff
- Seattle, WA
- 206.684.8888
- rebecca.herzfeld@seattle.gov

Policy link

- Amendment to Seattle Municipal Code 23.49.01, as approved by the Seattle City Council on April 3, 2006: http://www.seattle.gov/council/attachments/2006cb115524.pdf
- For more information on rehab codes around the country, see Phil Mattera, Breaking the Codes: How State and Local Governments are Reforming Building Codes to Encourage Rehabilitation of Existing Structures (Good Jobs First, 2006), available at www.goodjobsfirst.org.

2 Brownfield Redevelopment

Besides investing in existing buildings, cities can expand more efficiently by building on small pockets of open space in center cities. Some of the last remaining open space within city boundaries is "brownfield" land—land that once housed industrial or commercial facilities, and is often contaminated with toxins. Developers have begun to see the benefits of investing in brownfield land, now that remediation technology has become relatively inexpensive. Buildings erected on these sites can be financially lucrative, due to their easy access to public transportation; proximity to shopping, restaurants and other amenities; available, existing infrastructure and services, and lower property taxes.

What Cities are Doing Now:

In 1996, **Cadillac, Michigan** created the first Brownfield Redevelopment Authority (BRA) in the state. The BRA uses tax increment financing (TIF) revenues generated from specific brownfields to fund environmental clean-up, as well as site preparation and public infrastructure improvements on these sites. There are now BRAs throughout Michigan; these tax incentives are generally used to redevelop decommissioned service stations into office buildings, commercial properties, and parks.

For more information

- Peter Stalker, City Manager
- 231.775.0181 ext. 119

Policy link

- General information about Brownfield Redevelopment Plans in Michigan, including supporting statutes: http://www.michigan.org/medc/services/general/cat/guide/index.asp

3 Location Efficient Mortgages

One complaint about housing near transit hubs is that it is often priced too high for the middle- and lower-income people who most benefit from the proximity to mass transit. A good way for cities to promote affordable housing near transit is to work with local mortgage brokers and affordable housing agencies to implement location-efficient mortgage, or LEM, programs. LEMs allow homebuyers to capitalize on the savings that result from living near transit service (e.g., savings from not owning and operating a car—approximately $6500 per car per year for the average American household), by calculating these savings into the purchasing power of the homeowner. The result is increased borrowing power of $30K-$50K in dense communities that are well-served by transit. LEMs are currently offered in Seattle, San Francisco, Los Angeles, Chicago, and Madison, Wisconsin. Some of these cities combine the LEM program with a free or discounted bus or transit pass.

For more information on Location Efficient Mortgages, see the LEM website at http://www.locationefficiency.com

What Cities are Doing Now

In **Chicago, Illinois**, where the LEM concept originated as a project of the Center for Neighborhood Technology (CNT), the city's Department of Housing incorporated the LEM concept into its broader CityMortgage initiative, which offers a low interest rate, low down payment, and flexible mortgage terms to Chicago homebuyers. In 2001, the Chicago Department of Environment offered a voucher worth $900 toward the purchase of an EnergyStar refrigerator or washer/dryer set to the first 100 LEM borrowers under the CityMortgage program.

For more information

- Dave Chandler
- Center for Neighborhood Technology
- 773.278.4800, ext. 123
- david@cnt.org
- Fannie Mae Consumer Resource Center
- 800.732.6643

4 Transit-Oriented Development (TOD)

Revitalizing central cities, so that construction takes advantage of existing infrastructure and utility networks, is one way to decrease a city's fossil fuel use. Another is to help urban residents spend less time in their cars, by encouraging housing near mass transit hubs such as bus, subway and light rail stations. More and more, cities are encouraging this "transit-oriented development," or TOD, through tax incentives and strategic mortgage policies. Cities can also encourage TOD by allowing developers to build fewer on-site parking spaces in housing near transit, which dramatically lowers the cost of development.

The best TOD policies link tax incentives for new development not only to transit-friendly locations, but also to good jobs. A model Apollo Alliance TOD program would include a requirement that any developer receiving TOD funding or incentives would have to include local hire and/or apprenticeship policies in their development plans.

What Cities are Doing Now

Construction is due to start in 2006 on a TOD project in **Milwaukee, Wisconsin**. When two freeway ramps were torn down on the northern side of downtown Milwaukee, city activists and unions formed a coalition to ensure that any new development incorporate transit access, good jobs, and environmental benefits. The Good Jobs and Livable Neighborhoods Coalition and the city of Milwaukee ultimately signed a Community Benefits Agreement (CBA) that conditions the sale of city land freed up by the freeway demolition on a number of community benefits. Important features of this CBA include access to mass transit, along with:

- Prevailing wage for construction-phase jobs,
- 25 percent of construction-phase jobs in minority- or women-owned firms,
- 25 percent of construction employees to be minorities or women,
- Living wage or market wage (whichever is higher), plus benefits, for post-construction jobs,
- Local hire and training provisions, including first-source hiring,
- Green space and green design incorporated into all proposals,
- Community involvement in proposal review and acceptance.

For more information

- Bob Dennik, Director
- Milwaukee County Economic Development Division
- 414.278.4083
- RDennik@milwcnty.com

Policy link

- Information on the Park East CBA, including the final legislative language, can be found on the Institute for Wisconsin's Future website: http://www.wisconsinsfuture.org/workingfamilies/econdev/index.htm.
- For more information on the links between TODs and jobs, see Sarah Grady and Greg LeRoy, Making the Connection: Transit Oriented Development and Jobs (Good Jobs First, 2006), available at http://www.goodjobsfirst.org/pdf/makingtheconnection.pdf.

5 Stop Subsidizing Sprawl

As cities encourage downtown, transit-friendly development, they should also try to limit aggressive suburban sprawl. Limiting sprawl helps cities conserve energy and resources by decreasing commute times and thus improving air quality and community health. It also helps maintain open space such as agricultural and forest land, which allows more groundwater absorption and limits flooding. Finally, managing sprawl helps to keep central city residents closer to regional labor markets, which has overall benefits to the urban economy.

One simple way that cities and regions can act to curb suburban sprawl is to stop subsidizing this kind of development. Policies to accomplish this goal include:

Fees and Charges for Infrastructure Development

One way that cities and, perhaps more important, counties and metro regions can curb sprawl is to actually assess the costs of new development on suburban developers and residents. In most cities, the full cost of building the infrastructure for a new suburban community—building new schools, extending utility and sewer lines, and building roads—is incorporated into the city's existing budget rather than charged to suburban developers. As a result, the cost of suburban development is artificially low for these developers, while city taxpayers pick up the bill. A way to combat this is to charge new developers impact fees or infrastructure fees for development. This policy does not stop sprawl, but it does make central city development more competitive with suburban development.

What Cities are Doing Now

Lancaster, California has one of the most comprehensive "distance-based" impact fees—fees based not on provision of particular services such as roads, but on the actual distance of the new development from the central city. In 1992, Lancaster modified its original impact fee schedule to include a distance multiplier. The city identified a core urban area with a five mile radius. Beyond that core, the city imposes impact fees on developers which increase with each mile outside the core. Fees are used to offset infrastructure costs including: street improvements, traffic signals, drainage/flood control, water and sewage lines, and park/open space development.

For more information

- Planning and Development Services Division
- 661.723.6000
- http://www.cityoflancasterca.org/dpt.comdev.pds.php

Policy link

- Lancaster City Code §15.64: http://municipalcodes.lexisnexis.com/codes/lancaster/

DuPage County, Illinois assesses transportation impact fees based on the type of property (e.g. residential, commercial-industrial, commercial- retail, etc.) being proposed for development. The county then assigns each property a fee based on potential traffic generation, trip length associated with the land use, and the percentage of DuPage County road miles in the impact fee service area. Developers can mitigate or offset their impact fees in a variety of ways, for instance by providing roadway system improvements as part of the development. In an effort to encourage rehabilitation of existing structures, the county also allows impact fee offsets for projects that use all or a portion of an existing building in the new development.

For more information

- DuPage County Division of Transportation
- 630.407.6900

Policy link

- DuPage County Department of Transportation, Transportation Impact Fee Procedures Document: http://www.dupageco.org/emplibrary/ACF26C9.pdf

5 Stop Subsidizing Sprawl cont...

TIF Reform

Tax incremental financing (TIF) is an extremely popular development tool available to local communities in 48 states. TIF works as follows: a municipality designates a specific geographic region where it wants to promote development. At this time, the city determines a base value for all property within the region. As the municipality invests money in the district, the tax revenue on any property value growth above this base value—known as the "increment"—is used to pay off the costs of those improvements

This type of financing was originally intended to help struggling urban areas attract new development. However, it is increasingly used for greenfield, sprawling developments. Because open farmland's initial property value is so low, TIF projects that include open land generate a great amount of increment, paying themselves off quicker than redevelopment TIF districts. Cities can reform TIF laws to focus the subsidy on infill and redevelopment projects, rather than on projects that eat up productive farmland.

What Cities and States are Doing Now

Wood River, Illinois established a TIF policy which limits the use of TIF funds for greenfield development. The policy requires that if a TIF proposal contains vacant land, it must conform to the City's plans and programs and serve as a catalyst for further, high quality development or redevelopment. This policy ensures that all TIF-financed development proposals meet the surrounding community's goals for orderly and paced development.

For more information

- Nancy Schneider, Finance Director
- 618.251.3131

The **State of Missouri** recently passed 2006 Senate Bill 832, which prohibits the use of TIF funds for any greenfield residential development. While the legislation still allows for TIF-subsidized retail, commercial, and industrial greenfield development, it does provide a model for actions to contain sprawling development. Because TIF is a locally administered program, cities can establish their own TIF policies that prevent any TIF funds going to greenfield development.

For more information

- Senator John Greishiemer
- Missouri State Senate
- 573.751.3678

Policy link

- Bill Summary and Links for Missouri 2006 Senate Bill 832: http://www.senate.mo.gov/06info/BTS_Web/Bill.aspx?SessionType=R&BillID=21450

6 Smart Grid Expansion

When it comes to smarter and cheaper energy use, upgrading the utility grid is probably the most important infrastructure investment cities can make. "Smart grids," a relatively new concept for U.S. cities, use existing digital technology to react in real time to power grid problems or price spikes by sending signals to customer homes and appliances telling them to reduce energy use during these times. Even more advanced grids incorporate distributed generation, meaning that the grid has a variety of power sources feeding into it (e.g. traditional power plants, wind turbines, solar panels, small hydropower) and can moderate the amount of power coming in from each source based on the availability and cost of that power. For example, if one power plant goes offline in a city (because of natural causes or an outside attack), a smart grid with distributed generation would know to switch gears and become more dependent on other, more reliable sources.

Smart grids are key to energy efficiency and cost savings because they direct energy where it is most needed at the time it is most needed, instead of keeping all systems on full power all the time. These systems also provide extensive usage and pricing information to consumers, allowing them to better monitor their own energy use. Finally, in this time of energy instability, smart grids with distributed generation can provide some degree of comfort that an attack on a city's power systems might not completely shut that city down.[23]

What Cities are Doing Now

The cities of **Yakima, Washington** and **Gresham, Oregon** are currently participating in a pilot smart grid project with the U.S. Department of Energy's Pacific Northwest National Laboratory (PNNL), Whirlpool, and IBM. Three hundred households are involved in the project, which includes real-time monitoring of consumption and pricing, web-based energy use controls that consumers can access, and "smart appliances" able to respond to price spikes and grid problems. The project also includes a distributed generation system of small wind turbines.

For more information

- Rob Pratt, GridWise Program Manager
- Pacific Northwest National Laboratory
- 509.375.3648
- http://www.pnl.gov/

Financing the Clean Energy Future

The policies discussed in this report will nearly all save cities money in the long run. But some of these projects take significant start-up capital—capital cities and their residents do not always have on hand. Cities do have a range of options for ways to raise capital for energy efficiency and renewable energy projects, however. Cities can leverage their bond ratings to get good financing for these projects, and to lower the risk for outside investors. They can invest a small percent of their city employees' pension funds in efficiency and renewable projects with good returns—often better returns than these funds would get from the stock market. And they can dedicate their savings from earlier clean energy projects for investment new programs, as new technology is developed.

1 Clean Energy Funds

One way to develop funding streams for renewable and efficient energy projects is to leverage public and private money to create a dedicated lending institution for clean energy projects. Because energy efficiency upgrades are typically able to pay for themselves over time, setting aside a revolving fund dedicated to efficiency investments makes good sense. Setting aside a dedicated pool of capital for renewable/efficiency projects ensures these important project will benefit from low- or no-interest loans and won't have to compete for funding in the annual budget process.

Loan funds differ in two ways—which types of projects they fund (public or private), and their source of capital (public or private). Some cities have set aside public money for the specific purpose of funding continual efficiency upgrades on their building stock. Others have pursued a mix of public and private money to fund efficiency and renewable projects on public and privately-owned property.

A final way to increase funding for renewable and efficiency projects is to pledge a city's unused assets as collateral for a dedicated renewable/efficiency loan fund. A city's unused assets can include the value of property in parks, foreclosed homes, and vacant lot held by the city. By pledging these assets as collateral, cities can significantly increase the number and dollar size of community and economic development investments, without additional public funding.

What Cities are Doing Now

Duluth, Minnesota maintains a revolving fund to finance local energy-efficiency improvements. Fifty percent of savings from each project is available for future energy-efficiency improvements. The mechanism supports continuous efficiency improvements without having to compete for funding in the annual budget-setting process.

For more information
- Sandy Sweeney, Energy Manager
- 218.730.5182
- ssweeney@ci.duluth.mn.us

Escanaba, Michigan partnered with a local technical college and energy efficiency business to apply for state money to form a revolving efficiency fund. The State of Michigan awarded $2 million for a set of improvements to Delta County government buildings. One of the first projects was a set of retrofits to Delta County's courthouse, its jail, and a county office building in 2003. Annual cost savings are estimated at $8,000, and the repayment of the loan—expected within seven years—is coming from the energy cost savings.

For more information
- Douglas Russell
- Bay de Noc Community College
- 906.786.5802 ext.1210

Milwaukee, Wisconsin is working with Wall Street Without Walls to establish a fund that collateralizes unused city assets for dedicated loan funds that will be accessible by minority-owned businesses. Mayor Tom Barrett has pledged to take a leading role in assembling unused city assets and soliciting asset contributions from local companies for the fund. While this is not specifically an energy strategy, it is one that improves the quality of life for Apollo's community partners in Milwaukee.

For more information
- Greg Stanton, Co-Director
- Wall Street without Walls
- New York City, NY
- 212.712.2759
- greg.stanton@wallstreetwithoutwalls.com

2 Bonding Initiatives

In 2004, local and state governmental bodies financed nearly 9,000 individual projects with about $230 billion in municipal bonds.[24] Public bonds take many forms, but the most common are revenue bonds and general obligation bonds. These bonds are sold to individuals, investors, pension funds and corporations who provide up-front investment money in exchange for a guaranteed rate of return on that investment. Issuing bonds allows governments to fund large-scale renewable and efficient energy projects without raising taxes, or can loan out money to businesses to install renewable energy systems or retrofit their facilities with energy efficient infrastructure.

Revenue bonds are public bonds that incorporate a specific payback mechanism into their design. Often they are paid off through fees or income generated through the project funded. Energy efficiency projects fit this bonding scheme particularly well because the revenue needed to repay the bonds can be recouped in long-term energy cost savings. So long as the money saved from lower energy bills is funneled back into the bond payback program, revenue bond financing of energy efficiency projects allows states or municipalities to reduce energy usage without any actual outlay of city funds.

General obligation bonds are bonds without a specific payback mechanism. These bonds leverage a city's credit rating to secure low-interest financing for public projects and are paid off over time through tax revenues. Because general obligation bonds finance much of the development in cities, some communities are using the bonding process to ensure environmentally-friendly development patterns. An emerging approach in this area is climate neutral bonding. Climate neutral bonding policies require that bond-funded development cause no net increase in greenhouse gas (GHG) emissions within the bond issuing agency's geographical jurisdiction after the project becomes operational.[25] Such policies ensure that we consider the environmental effects of development and develop markets for green power purchases, as cities seeks new ways to offset increases in GHG emissions from development.

What Cities are Doing Now

The cities of **Hibbing** and **Virginia, Minnesota** used $84 million in revenue bonds as the primary financing mechanism to repower two older coal-fired power plants with locally-sourced biomass material. The Laurentian Energy Authority, a joint venture of the two cities' public utilities, seeks to capitalize on the market created by Minnesota's renewable energy requirements. The repowered plants will produce 35 MW of renewable power from biomass, preserve 70 existing jobs and create 60–100 new jobs in the communities. The project will use biomass grown and harvested by local loggers, stored at a separate wood yard between the two cities. These bonds will be repaid by monies generated by the project.

For more information

- Terry Leoni, General Manager
- Virginia Department of Public Utilities
- Virginia, MN
- 218.748.7564
- leonit@vpuc.com
- Jim Kochevar, General Manager
- Hibbing Department of Public Utilities
- Hibbing, MN
- 216.262.7728
- jimk@hpuc.com

Lamar, Colorado's public utility, Lamar Light and Power, is partnering with the Arkansas River Power Authority to build a 6 MW wind farm southeast of the city. The site will consist of four 1.5 MW wind turbines, three of which will be owned by the city of Lamar. The project is being funded by the sale of $6,000,000 of revenue bonds by the Lamar Utilities Board. The bonded indebtedness is for 20 years with annual payments in excess of $400,000. The generated cost of the power is estimated to be between $.04 and $.045 per kilowatt-hour, which compares favorably with other Light and Power resources; this cost may be reduced if Lamar Light and Power qualifies for Renewable Energy Credits provided by the Department of Energy and/or the sale of environmentally friendly "green tags."

For more information

- Department of Light and Power
- 719.336.4376
- http://www.ci.lamar.co.us/lightpower/index.html

3 Pension Fund Investments

City governments control a remarkable amount of resources in the form of their employees' monthly contributions to pension funds. These funds are administered by city staff or outside fund administrators, who are charged with investing this money to achieve asset growth. One emerging approach is to invest this pension money into energy efficiency and renewable energy programs for government-owned infrastructure. Energy savings resulting from these infrastructure upgrades are then used to repay the capital costs of the programs, plus an investment fee to the pension funds. Once the program has been paid off, the state receives revenue in the form of decreased energy costs.

The Apollo Alliance recommends that city treasurers invest a portion of their pension fund into a comprehensive retrofit of all city-owned buildings. Any excess funds should be directed into private equity investments for environmental technologies. Technologies can include renewable energy, fuel cells, water purification, recycling technologies and waste reuse technologies.

What Cities are Doing Now

The **Los Angeles Apollo Alliance** has proposed creating a $100 million SustainLA fund to finance green building projects, job training and job creation. The fund would be established by diverting 0.5 percent of the city's investment portfolios and pension funds into large public works projects that could help shape the regional economy and provide training and employment for thousands of city residents. Since the rate of return on energy efficiency investments is often higher than that of the stock market, such a fund would benefit the city financially as well.

For more information

- SCOPE/Los Angeles Apollo Alliance
- 323.789.7920

What States are Doing Now

The only existing pension fund investment in clean energy is at the state level: California's Green Wave program. The program directs California's two largest pension funds, the California Public Employees' Retirement System (CalPERS) and the California State Teachers' Retirement System (CalSTRS) to invest roughly $1.5 billion into the clean energy industry, including $200 million in investments for Real Estate audits and energy efficiency retrofitting. These investments should save an estimated $40 million dollars annually in the aggregate, equating to an Internal Rate of Return (IRR) of 14.16% over ten years, with a 5-year payback period.

For more information

- Office of Treasurer Phil Angelides
- Sacramento, CA
- 916.653.2995
- http://www.treasurer.ca.gov/greenwave

4 Energy Savings Performance Contracts

Energy Savings Performance Contracts enable governments, industrial firms and property managers to contract with companies specializing in energy efficiency, called Energy Service Companies (ESCO). ESCOs provide customers with detailed assessments of guaranteed energy savings. ESCOs then perform the efficiency retrofits requiring no up-front costs and assuming all risks; they recoup these costs through energy savings. If energy savings goals fall short, the ESCO will provide the customer with a check for the difference, although savings typically exceed projected amounts within two to ten years.[26] Departments should see additional savings beyond the amount needed to repay the financing from utility rebates, lower oil surcharges, and reductions of utility demand charges.

ESCO projects have a long history of generating significant energy cost savings, much of which is realized through lighting and HVAC work. Retrofits of lighting alone typically achieve a median 47 percent savings over the existing lighting costs. Projects that target energy savings both in lighting and non-lighting improvements reduce total electric bills significantly, with a median savings of 23 percent.[27] ESCOs are not just a cost-effective method of achieving energy savings; they are also a job creation tool. A 2002 analysis by the National Association of Energy Service Companies and Lawrence Berkeley National Laboratory suggest that ESCOs provide between $1.9 billion and $2.1 billion in energy efficiency services annually.[28] Approximately one third of this money goes directly to labor costs.[29]

What Cities are Doing Now

Redlands, California contracted with a private company, Honeywell, to conduct upgrades on city's HVAC equipment, wastewater pumps, lighting systems, irrigation systems, and sensors. In all, the company conducted upgrades on twelve buildings that save the city over $450,000 per year in energy costs. Honeywell fronted the capital investment for these upgrades and was repaid through the energy savings over a seven year period.

For more information
- Ron Mutter
- Department of Public Works
- 909.798.7655

Little Rock, Arkansas administers a performance contract between the city and a private contractor to perform energy efficient retrofits funded by energy savings. The current program guarantees an annual savings of $320,316 from efficiency retrofits such as installation of efficient lighting systems, conversion of traffic signal lights from incandescent to LEDs computerized control of heating and cooling systems (HVAC), installation of a geothermal HVAC system.

For more information
- Jessie Trigleth, Manager
- Building Services Division
- 501.918.3664
- jtrigleth@littlerock.org
- www.littlerock.org/CityDepartments/PublicWorks/BuildingServices

Building a Workforce for the Clean Energy Future

Many of the financing mechanisms that we recommend involve some sort of government subsidy or tax break to private companies that produce, buy, sell or distribute energy efficient or clean energy products. Cities can and should attach job quality and job training standards to these types of subsidies to achieve greater public benefit. Essentially, these standards require that any business receiving a government subsidy or tax credit must provide employees decent, family-supporting wages and/or benefits. These standards ensure that new jobs created will be "high road" jobs: providing a decent income and health benefits, and helping residents avoid the "hidden taxpayer costs" that occur when working families rely on government subsidies like food stamps, Medicare, and the Earned Income Tax Credit.

High-Priority Job Quality and Training Standards for Local Energy Projects

- Prevailing wage or self-sufficiency wage plus adequate health benefits
- County-wide local-hire commitment
- Ties to state-approved apprenticeship programs
- Job preparation training in coordination with community-based job training programs (pre-apprenticeship) prior to staffing
- Commitment to compliance with state and federal labor laws
- Commitment to safe and healthy work environments
- Appropriate level of workers compensation

1 Job Training Standards

A key component of the Apollo Alliance clean energy/good jobs strategy is developing a workforce that is trained to fill those jobs. Because many jobs associated with energy efficiency and renewable energy are relatively new, communities may have to develop new strategies and policies to help workers access these jobs—or at least they will have to integrate existing workforce development and training opportunities more fully into the emerging green economy. How communities approach workforce development for green jobs is crucial, as these programs can make the difference between a "high-road" economy with good, family-supporting jobs filled by local workers, and a "low-road" economy with imported, low-wage labor.

Regional Energy Industry Partnerships

One way that cities can approach the workforce development challenge of the new energy future is to facilitate regional industry partnerships made up of the industries involved in the energy economy—manufacturers, installers, and operations specialists—along with representatives from local government, labor, and regional technical colleges or other training institutions. These partnerships can work together to identify the energy industry's major workforce needs, and can design a training curriculum best suited to meet those needs. Involving labor representatives ensures that training does not just happen for new employees, but also on the job throughout each worker's time in the industry.

What Cities are Doing Now

In 2005, **Milwaukee, Wisconsin** Mayor Tom Barrett brought together a "Green Team" made up of government, non-profit, utility, business and university representatives to recommend strategies for greening the city. The Green Team's report included a specific recommendation to work with the **Wisconsin Apollo Alliance** to create an "energy technology cluster" for the city. This cluster would bring together Milwaukee's many energy technology companies with local workforce development agencies to "ensure that Milwaukee has a well-trained workforce that can support the green economy" and help to "locate job opportunities in the communities in most need of expanded opportunities."

For more information

- Bill Holland, Midwest Regional Field Director
- Apollo Alliance
- holland@apolloalliance.org

1 Job Training Standards cont...

Job Training and Weatherization Assistance Programs

The federal government allocates millions of dollars each year through its Weatherization Assistance Program. This money flows to state agencies which then disburse the funds to local community action agencies, who actually perform the energy retrofits. This outlay of public money provides an opportunity to incorporate job training opportunities for community members. By doing so, cities can reap dual gains—both a more efficiency building stock and also helping community members access the construction industry.

What Communities are Doing Now

In 2001, the Inter Tribal Council of Arizona (ITCA) Weatherization Program, which coordinates weatherization work on reservations in the state, gave a grant to the **Cocopah Indian Tribe**, based in **Yuma County, Arizona**, to provide weatherization services to Cocopah families. The ITCA provided on-site technical training to the Tribe, and helped send two tribal crew members to a DOE-sponsored National Weatherization Training Conference. Crew members then contacted a solar screen manufacturer in Yuma, Arizona, to teach the crew how to manufacture these screens on-site, to reduce cooling loads in the reservation's very hot climate near the Sonoran Desert. The Cocopah Tribe ultimately developed the first self-sustaining tribal weatherization program in Arizona—a program that simultaneously reduces energy bills and creates good local jobs on the reservation.

For more information

- Cocopah Indian Tribe
- 928.627.2102
- www.cocopah.com

1 Job Training Standards cont...

Apprenticeship Utilization

Cities and states that are serious about energy efficiency and domestic production of clean energy must have a supply of workers who are well-trained in modern energy technologies. To ensure that this workforce is well-qualified and paid family-supporting wages, cities should add requirements or incentives for employing workers trained through state-approved apprenticeship programs to any energy legislation. To date, these requirements have been most successfully integrated into Project Labor Agreements (PLAs), or the agreements between units of government and contractors carrying out publicly funded projects. For example, PLAs can require contractors to use apprentices for a specified percentage of all hours worked.

State-approved apprenticeship programs tie together economic and workforce development, and offer benefits directly to the community, existing workers and employers. Existing workers utilize the programs to update and broaden their skills in technologies necessary for new positions in expanding fields. For new workers coming from a variety of backgrounds, apprenticeship programs offer training for and placements into good, family-supporting jobs. Employers and emerging industries rely on apprenticeships programs to provide a reliable supply of workers skilled in the latest industry technologies.

What Cities are Doing Now

Located in **Oakland, California**, The Cypress Mandela Pre-Apprenticeship Training Program was initiated in 1993 to provide local residents with training and employment opportunities in repairing damaged freeways (resulting from the 1989 Loma Prieta earthquake). The Women in Skilled Trades (WIST) Program began in 1988 as a means of preparing women to enter the male-dominated construction industry. Today, the two programs work together to train men and women to enter the skilled trades and other occupations with employers across the San Francisco Bay Area.

This free pre-apprenticeship program, endorsed by the Building and Construction Trades Council, offers classroom instruction and on-the-job experience in construction-related jobs including electrical work, hazardous materials training, and construction. The program works in conjunction with a number of public agencies, including the city of Oakland, the California Department of Transportation, the Environmental Protection Agency, and the United States Department of Labor. Instructors from the Building Trades unions and local colleges ensure that curriculum and training is relevant to current industry needs. The Cypress Mandela/WIST program channels well-prepared graduates to jobs in Building Trades such as Carpenters, Ironworkers, Glaziers, Laborers, and Electricians.

For more information

- Art Shanks, Project Director
- Cypress WIST
- 510.768.4473
- artshanks@yahoo.com

1 Job Training Standards cont...

Solar energy plays a dual role at the IBEW-NECA Technical Institute in **Alsip, Illinois**. This vocational high school has introduced a photovoltaic system that will provide both electricity to the school and education for the students. The solar powered system will generate 5 kW of energy. Students will also benefit from the system by learning about the latest technology in photovoltaics. As a school that educates future electricians, solar energy is quickly coming to the forefront of their energy studies, where standard electrical training is being supplemented by the latest in solar advances. The project was partially funded by the Illinois Department of Commerce and Community Affairs, which chipped in $19,188, while the International Brotherhood of Electrical Workers Local 134 and the Electrical Contractors Association also contributed their services.

For more information

- IBEW-NECA Technical Institute
- 708.389.1340
- info@in-techonline.org
- http://www.in-techonline.org/home.cfm

Policy link

- The Center for Policy Alternatives model apprenticeship utilization requirement legislation: www.stateaction.org/issues/legislation.cfm?issue=HighRoad.xml

2 Job Quality Standards

Job Quality Standards most commonly take two forms: wage standards and mandates for employer-provided healthcare. Other job quality issues that can be addressed include requirements that new jobs created by the business be permanent and full-time jobs, that new jobs offer opportunities for training and career advancement, that workers be allowed sick leave and/or paid vacation, and/or that a percentage of the new jobs go to "local hire," meaning that they given to local residents.

Under wage standards, employers must pay the going market rate to employees. The rate can be tied to the state or regional median or average wage, or to the prevailing wage in a particular geographical area and industry.

Employer-provided benefit standards can require businesses to provide health benefits to employees, to pay for a specific percentage (50–80 percent) of employees' health care costs, or require that businesses either meet the wage standards discussed above, or provide health benefits

Studies show public projects in states with such laws save taxpayer dollars.[31] In contrast, contractors in states with no prevailing wage laws tend to hire inexperienced workers in an attempt to keep down payroll costs. However, occupational injuries soar on these projects and the use of low-wage workers routinely results in increased supervision, maintenance and cost overruns.

What Cities are Doing Now

The city of **Eau Claire, Wisconsin** has a prevailing wage ordinance to preserve local area wages and labor standards by requiring contractors engaged in publicly funded construction projects to pay construction workers wages that are at least comparable to those earned for similar work in the same county. The ordinance applies to all building or construction work that is financed in whole or in part with city financial assistance.

For more information

- Mike Schatz, Director of City Development
- 715.839.4914
- mike.schatz@ci.eau-claire.wi.us.
- http://www.eauclairedevelopment.com/PrevailingWage.pdf

Milwaukee, Wisconsin recently incorporated job quality standards into a downtown development deal. When two freeway ramps were torn down on the northern side of downtown Milwaukee, city activists and unions formed a coalition to ensure that any new development incorporate transit access, good jobs, and environmental benefits. The Good Jobs and Livable Neighborhoods Coalition and the city of Milwaukee ultimately signed a Community Benefits Agreement (CBA) that conditions the sale of city land freed up by the freeway demolition on a number of community benefits. Important job quality features of this CBA include:

- Prevailing wage for construction-phase jobs,
- 25 percent of construction-phase jobs in minority- or women-owned firms,
- 25 percent of construction employees to be minorities or women,
- Living wage or market wage (whichever is higher), plus benefits, for post-construction jobs,
- Local hire and training provisions, including first-source hiring,

For more information

- Bob Dennik, Director
- Milwaukee County Economic Development Division
- 414.278.4083
- RDennik@milwcnty.com

Policy link

- Information on the Park East CBA, including the final legislative language, can be found on the Institute for Wisconsin's Future website: http://www.wisconsinsfuture.org/workingfamilies/econdev/index.htm.
- For more information on the links between TODs and jobs, see Sarah Grady and Greg LeRoy, Making the Connection: Transit Oriented Development and Jobs (Good Jobs First, 2006), available at http://www.goodjobsfirst.org/pdf/makingtheconnection.pdf.

3 Best Value Contracting

Best Value Contracting (BVC), also known as "negotiated contracting" and "competitive sealed proposal contracting," is a procurement method that provides an alternative to the traditional lowest-bid method of contracting. As a competitive contracting process increasingly used in the public sector, BVC requires contracts to be awarded to the contractor offering the best combination of price and qualifications, including the use of skilled, high-quality workers, past performance, and the ability to complete projects in a safe, timely, and cost-effective manner.

In addition to the potential benefits of BVC for labor, including contractor participation in registered apprenticeship programs, on-job safety and health programs, and the sufficiency/reliability of craft labor supply sources and project staffing plans, BVC can also be used to promote environmentally sustainable development. To this end, environmental groups can push to have such criteria as past environmental performance of the bidder, plans for protection of flora/fauna and construction/demolition of waste disposal, contractor certification in LEED construction, contractor/subcontractor experience with green building design and construction, a work scheduling plan, including environmental impact on existing tenants, and the ability to host training programs on energy saving for facilities managers and janitors, included in the criteria for awarding contracts.

What Cities are Doing Now

In 2002, the city of **Portland, Oregon** used an innovative RFP process to screen contractors for two major affordable housing projects. In the RFPs for these projects, the city assigned 25 points out of a possible 100 points to "Green Design." The normally dominant categories of "Market Potential" and "Team Qualifications" were assigned only ten and 20 points, respectively.

For more information

- Dan Saltzman, Commissioner
- Office of Sustainable Development
- Green Building Division
- 503.823.7725
- http://www.green-rated.org/

Policy link

- RFP for 2002 "Innovations in Affordable Housing:" http://www.aia.org/SiteObjects/files/RFP-Portland_OR_affordable_housing_grants.pdf

About the Apollo Alliance

The Apollo Alliance for Good Jobs and Clean Energy

The Apollo Alliance aims to improve America's security, technological leadership, economic strength, and shared prosperity by achieving sustainable American energy independence through efforts at the national, state and local level. Named after President Kennedy's challenge in the 1960s to land a man on the moon within a decade, our new Apollo Alliance has a bold strategy to direct $300 billion in targeted investments towards achieving sustainable energy independence within a decade. Our plan is supported by key national leaders in the labor, environmental, and business sectors, as well as by communities of color who are traditionally most harmed by existing energy policies.

Some of Apollo's most exciting work takes place at the state and local level, where we bring together labor, environmentalists, business, civil rights activists, elected officials and their constituents to implement high-performance policies. These state and local Apollo groups work on specific job-generating policies and projects to increase energy efficiency and renewable energy use, and build the transportation, utility, and other infrastructure needed to support sustainable efficient energy practice. Over the past two years, state and local Apollo Alliances have been built in cities from Los Angeles to New York and states from Hawaii to Massachusetts. These state and local alliances pursue specific legislative and administrative reforms to increase investment in energy efficiency, renewable power, and other clean energy strategies.

Investment at all levels of our economy creates high quality jobs and increased income, as well as improving the environment and public health. It also more than pays for itself, offering fiscally strapped states, cities, and for-profit investors a better than competitive real rate of return (often as high as 15–20 percent annually).To learn more about how your city can start an Apollo project, and to find information on existing coalitions and projects, visit our State and Local Apollo Strategy Center at http://www.apolloalliance.org/state_and_local/ or contact one of the Apollo Alliance regional organizers.

Apollo Alliance Policy Contacts

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Vice President/Chief of Staff
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COOL CA$H:

HOW LOCAL GOVERNMENTS ARE USING SMART ENERGY SOLUTIONS TO SAVE TAXPAYER DOLLARS AND CURB GLOBAL WARMING

Communities all over America are responding to the threat of global warming with smart energy solutions. Over 330 mayors, representing 53 million Americans in 47 states have signed the U.S. Mayors Climate Protection Agreement, pledging to reduce global warming pollution in their cities to 7 percent below 1990 levels by 2012 (see www.seattle.gov/mayor/climate).

These "Cool Cities" are working to meet this goal with practical and innovative energy solutions that reduce energy waste and pollution. As the examples in this fact sheet indicate, cities of every size and region in the country have discovered that smart energy solutions like cleaner cars, energy efficiency and renewable energy are paying big dividends by reducing energy costs.

Through energy efficiency and clean renewable energy technologies, cities are saving millions of taxpayer dollars every year and curbing global warming emissions. These savings enable communities to turn around and invest more on schools, job creation, essential services and new infrastructure.

COOL CITIES ACROSS AMERICA ARE SAVING MONEY AND PROTECTING THE ENVIRONMENT

The Sierra Club's survey of city energy solutions only counted the energy cost savings reported by the cities themselves, research reports and news accounts. The 46 cities profiled in this report are currently saving over $140 million and reducing more than 500,000 tons of global warming pollution every year through energy efficiency, clean renewable power and cleaner automobiles.

In addition, a report by the International Council for Local Environmental Initiatives (ICLEI), found that the clean energy solutions adopted by the 159 U.S. cities in their Cities for Climate Protection (www.iclei.org/co2/) program have collectively realized annual cost savings of over $535 million in energy and fuel costs, while reducing global warming pollution by 23 million tons every year.

The exciting news is that the energy savings documented below in this report represent just a small fraction of the "cool cash" that U.S. cities are earning through smart energy solutions. These successes highlight the great potential for all our cities to save money while leading the way toward a safer and more secure energy future.

♦ ENERGY EFFICIENCY SOLUTIONS

Energy efficiency—using less energy through better technology—is the most cost-effective and fastest way to meet our energy needs. Numerous cities are realizing impressive returns from their investment in high-tech interior and street lighting, energy-efficient building standards and retrofits, and modernizing heating, cooling and other systems.

By replacing outmoded light bulbs in street traffic lights with highly-efficient LED (light emitting diode) bulbs, U.S. cities report over $10.4 million savings every year. This simple solution is working for big cities like Denver ($218,000/year savings), Kansas City ($95,000/year), and Salt Lake City ($50,000/year) as well as for smaller cities such as Keane, NH ($3,854/year). Passasic, NJ reduced their annual energy bill by $65,000 by changing the light bulbs at just 40 intersections.

Installing efficient compact florescent light bulbs in interior lighting in 60 municipally-owned buildings is saving Palo Alto, CA $117,625 each year. The small town of Saco, ME has projected a $15,000 annual energy savings from a proposed lighting upgrade in all of their school and municipal buildings.

Modernizing both old and new building with energy-efficient building designs and materials are delivering impressive energy cost savings. Dallas is saving $246,000/year at one police headquarters by meeting the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) standards (usgbc.org). Silver Fossil Ridge High School in Ft. Collins, CO reduced its energy costs by $70,000/year in this way.

Large facilities such as Pittsburgh's new David Lawrence Convention Center ($500,000 dollars saved annually) are significantly lowering their energy costs through energy efficient designs. Austin, TX is saving $480,000 per year by retrofitting 40 schools with energy efficient measures. The Twin Falls, ID school district upgraded its 11 schools with more efficient lighting and improvements to the heating, ventilation, and air-conditioning systems, which is expected to reduce energy costs by $3.5 million.[1]

When cities put together a comprehensive energy efficient plan, the savings are even more striking. Austin's city-owned utility's residential and commercial energy efficiency program is saving $28.9 million per year while reducing global warming pollution by 59,000 tons annually. Similar programs in Ft. Collins ($4.4 million/year), Portland, OR ($2.3 million/year), and St. Paul, MN ($7.9 million/year) reap impressive savings as well.

ENERGY EFFICIENCY SOLUTIONS

City	Policy Adopted	Cost Savings ($/Yr)	Greenhouse Gas Reduction (Tons eCO2/Yr)	Payback Time (Years)
ARLINGTON, MA	Energy efficient street lights installed.[2]	$96,000		0.5
ARLINGTON, MA	Town library lighting replacement.[3]	$9,000		1
AUSTIN, TX	City utility savings through residential & commercial energy efficiency programs[4]	$28,929,023	59,000	
AUSTIN, TX	Energy efficiency retrofits at 40 schools[5]	$480,000		6.9
BROOKLINE, MA	LED traffic lights installed[6]	$58,941	[7]	2.8
BROOKLINE, MA	Curbside Recycling[8]	$179,265		3.2
CAMBRIDGE, MA	Energy efficiency projects in municipal and school buildings.[9]	$470,850		5.25
CHARLESTON, SC	Energy-saving improvements[10]	$625,000	3,805	
CHICAGO, IL	Green Bungalow Initiative - Energy Efficiency retrofits(4 homes)[11]	$900/home	56	4.6-8.1
CHICAGO, IL	LEED Platinum Chicago Center for Green Technology[12]	$29,000		

CHICAGO, IL	Retrofitting all 105 fire stations with energy efficient lighting in 2006[13]	$250,000	3,515	
CHULA VISTA, CA	LED traffic lights installed[14]	$74,000		
CLACKAMAS, OR	LEED Silver Clackamas High School[15]	$69,000		
DALLAS, TX	LEED Silver Jack Evans Police Headquarters[16]	$246,000		
DENVER, CO	LED traffic lights installed[17]	$817,000		
DENVER, CO	Webb Municipal Building certified by USEPA's Energy Star Program[18]	$218,000		
FORT COLLINS, CO	LED traffic signals installed at more than 160 intersections[19]	$110,000 expected	3,000	3.4
FORT COLLINS, CO	LEED Silver Fort Collins Utilities Vehicle Storage[20]	$9,000		
FORT COLLINS, CO	LEED Silver Fossil Ridge High School[21]	$70,000		
FORT COLLINS, CO	Energy consumption reduction targets of the Electric Energy Supply Policy[22]	Avg. $4,444,444[23]		
FREEPORT, ME	Repaired heating control systems in the Public Safety Building and the Public Library. [24]	$320	1.85	
FREEPORT, ME	Energy-efficient lighting retrofit in Public Safety garage.[25]	$1,620	9.3	4
KANSAS CITY, MO	2,518 LED traffic lights installed[26]	$95,000		5.8[27]
KANSAS CITY, MO	Energy Efficient Retrofits of City Buildings[28]	$1,500,000		
KEENE, NH	Energy Efficient Equipment at Waste Water Treatment Plant[29]	$27,914	182	
KEENE, NH	LED traffic lights installed[30]	$3,854		1-2[31]
KING COUNTY, WA	LEED Gold King Street Center[32]	Avg. $50,000[33]		
NAPA, CA	Lighting retrofits[34]	$69,630 projected		
NAPA, CA	590 LED traffic lights installed[35]	$20,797 projected		
NAPA, CA	Parking lot lighting retrofits[36]	$18,802 projected		
NEWTON, MA	35 energy efficiency projects in municipal & school district buildings.[37]	$50,000	341	2
NEW YORK, NY	LED traffic lights installed at 11,600 intersections[38]	$6,000,000		4.7[39]
PALO ALTO, CA	LED traffic lights installed at 89 intersections[40]	$120,000		
PALO ALTO, CA	Retrofit of lighting systems in 60 city buildings[41]	$117,625		6.6[42]
PALO ALTO, CA	Computer energy savings[43]	$17,500		
PASADENA, CA	Customer energy efficiency savings through City services and incentives[44]	$2,173,000		
PASSAIC, NJ	LED traffic lights installed at 40 intersections[45]	$65,000		
PITTSBURGH, PA	LEED Gold David L. Lawrence Convention Center[46]	$500,000		
PORTLAND, OR	More than 13,300 LED traffic lights installed	$500,000[47]	2300	3[48]
PORTLAND, OR	LEED Certified Oregon Convention Center[49]	$110,000		
PORTLAND, OR	City Energy Challenge - energy efficiency[50]	$2,300,000		
POWAY, CA	City Buildings Lighting Retrofit Program - 600 bulbs changed to fluorescent[51]	$9,640		
REDONDO BEACH, CA	Energy conservation measures[52]	$200,000 projected		
SACO, ME	Proposed Energy Efficient Lighting in all school & municipal buildings[53]	$15,200 projected[54]		5
SACRAMENTO, CA	23 Energy retrofit projects such as energy-efficient lighting, HVAC equipment, and LED traffic signals[55]	$440,000		
SALEM, MA	Municipal parking garage lighting retrofit.[56]	$21,887		2
SALT LAKE CITY, UT	Changed all lighting in city & county buildings to compact fluorescent	$33,000[57]		
SALT LAKE CITY, UT	LED traffic lights installed	$50,000[58]	716[59]	
SAN DIEGO, CA	Energy-efficiency retrofit of City Administration Building Complex[60]	$500,000		
SAN DIEGO, CA	Upgraded 86% of traffic lights to LED[61]	$1,300,000	7,437	
SAN DIEGO, CA	Energy efficiency upgrade of Operations Center Administration Building[62]	$14,000	45	
SAN DIEGO, CA	The City's Energy Conservation and Management Program[63]	$3,500,000		
SAN FRANCISCO, CA	LED traffic lights installed[64]	$1,200,000 expected		
SEATTLE, WA	Energy Conservation Efforts by Seattle City Light[65]	$63,000,000	420,000	
SOMERVILLE, MA	LED traffic lights installed.[66]	$62,700 expected		2
ST. PAUL, MN	Comprehensive Energy Conservation Improvement Program[67]	$7,934,000	81,497	
VISALIA, CA	Energy efficiency retrofits - LED traffic lights, HVAC systems, city lighting[68]	$143,185		

♦ GREEN VEHICLE SOLUTIONS

Making our cars, trucks, and SUVs go farther on a gallon of gas is the biggest single step we can take to saving money at the gas pump, cutting America's dependence on oil, and curbing global warming. Many cities are cutting their global warming emissions by purchasing gas-electric hybrid cars and SUVs for their city vehicle fleet. By using less gasoline, hybrid vehicles release a fraction of the global warming and air pollution emitted by conventional vehicles while saving money at the gas pump.

By "greening" its automobile fleets with 113 hybrid vehicles, Chicago spends $21,000 less per year in fuel and maintenance costs. Los Angeles' 572 hybrids, combined with over 900 alternative fuel vehicles, save a whopping $9 million per year. Charlotte estimates that the fuel savings for its 21 hybrid cars ($16,800-$25,000/year) will offset the higher cost of hybrids in 2.5 to 5.5 years.

When it comes to greening city fleets, cleaner cars aren't the only way to earn "cool cash". For example, by placing police units on bicycles instead of driving cars, both Brookline, MA and Keene, NH are slashing costs and cutting pollution.

GREEN VEHICLE SOLUTIONS

City	Policy Adopted	Cost Savings ($/Yr)	Greenhouse Gas Reduction (Tons eCO2/Yr)	Payback Time (Years)
BROOKLINE, MA	Police Units on Bicycles[69]	$7,229	4.8[70]	0.1
BROOKLINE, MA	Hybrids- 2 Toyota Prius[71]	$1,019	[72]	11.1
CHARLOTTE, NC	21 Honda, Toyota, and Ford Hybrids[73]	$16,800-$25,200		2.5-5.5
CHICAGO, IL	113 hybrid vehicles[74]	$21,000		
DENVER, CO	55 hybrids (Prius) & use of biodiesel[75] [76]	$40,000	10 to 15	
KEENE, NH	Police Units on Bicycles[77]	$805	6	
LOS ANGELES, CA	572 hybrid-electric cars, over 900 alternative fuel vehicles[78]	$9,000,000		
MECKLENBURG CO., NC	6 Toyota and Ford Hybrids[79]	$4,800-$7,200		2.5-5.5
SALT LAKE CITY, UT	Green Fleet[80]	$156,000[81]	327[82]	

♦ RENEWABLE ENERGY SOLUTIONS

Cities around the country are investing in clean and renewable power like solar and wind energy to lower global warming emissions and create a reliable source of safe, homegrown electricity. Renewable power, combined with energy efficient buildings and appliances, is an essential and cost-effective solution for replacing electricity from dirty, fossil fuel power plants.

In Iowa, two wind turbines at Spirit Lake Elementary School are saving $120,000 and reducing global warming pollution by over 2100 tons every year. The first wind turbine installed by the city of Hull, MA has been so successful—$128,000 cost savings/year—that the city has put up a second one.

Solar panels plus efficiency measures are expected to lower energy costs at San Francisco's Moscone Convention Center by $210,000/year, preventing the release of over 1,100 tons of global warming pollution each year. The 10 kilowatt (kW) solar thermal array at one fire house in Chicago is saving the city $1000 a year.

Other renewable energy solutions such as geothermal and landfill methane recovery systems are also reducing city energy costs. A geothermal heat and cooling system at a municipal building in Park Hills, MO reduces energy costs by $4,800 annually and will pay for itself in less than 5 years. Great Bridge Middle School's geothermal system in Chesapeake, VA saves $41,500/year with a 6-year payback time.

Captured methane gas from a landfill helps to power Antioch Community High School in Illinois, reducing the school's energy costs by $100,000/year, while keeping 4,409 tons of global warming pollution out of our atmosphere. In some cases, cities are also profiting by selling methane recovered from landfills. Upper Marlboro in Prince George's County, MD makes an average of $720,000/year this way.

RENEWABLE ENERGY SOLUTIONS

City	Policy Adopted	Cost Savings ($/Yr)	Greenhouse Gas Reduction (Tons eCO2/Yr)	Payback Time (Years)
ALAMEDA COUNTY, CA	Eight photovoltaic systems installed throughout the county totaling over 2.3 MW.[83]	$700,000	683	
ANN-ARBOR, MI	Landfill Gas-to-Energy Project[84]	$35,000[85]	71,907	
ANTIOCH, IL	Landfill Methane Recovery for power at Antioch Community High School[86]	$100,000	4,409	
ARLINGTON, VA	Geothermal Heating & Cooling System at Taylor Elementary School[87]	$20,800		5
BROOKLINE, MA	Home Composting Program[88]	$11,616	13.5[89]	0.1
CHICAGO, IL	10 kW Solar Thermal Array at 1 Fire House[90]	$1,000		
CHESAPEAKE, VA	Geothermal Heating & Cooling System at Great Bridge Middle School South[91]	$41,500		6
HULL, MA	Wind turbine #1[92]	$128,850	1,200	
	Wind turbine #2	$407,800[93]	3,000[94]	
KEENE, NH	Landfill gas-to-energy system[95]	$55,000	140	5
LAKE ELSINORE, CA	Elsinore Valley Municipal Water District installed photovoltaic solar power systems on their maintenance and administrative buildings and carports.[96]	$170,000	330	
NAPA, CA	Solar power system at Lake Hennessey Pump station.[97]	$100,000 expected	140	
PARK HILLS, MO	Geothermal Heating & Cooling System at Municipal Building[98]	$4,800		4.6[99]
PATTONVILLE, MO	Landfill Methane Recovery for power at Pattonville High School[100]	$40,000	2,000	
QUEEN CITY, MO	Geothermal Heating & Cooling System at Schuyler Elementary School[101]	$30,000		3[102]
SACO, ME	Proposed Windmill[103]	Up to $800[104]		10

SAN FRANCISCO, CA	Solar Panels and energy efficiency measures in Moscone Center	$210,000 expected[105]	Avg. 1167[106]	
SAN FRANCISCO, CA	Southeast Water Treatment Plant installed 255 kW solar roof system.[107]	$38,400	100	
SONOMA COUNTY, CA	Sonoma County Water Agency installed 522 kW of roof and parking system solar arrays.[108]	$117,000	207	
SPIRIT LAKE, IA	2 Wind turbines at Spirit Lake Elementary School[109]	$120,000	2,102	
TUCSON, AZ	Methane capture for energy at Los Reales Landfill[110]	$500,000[111]	21,103	
UPPER MARLBORO, MD	Energy from Landfill Methane Recovery Sold by Prince George's County[112]	Avg. $720,000[113]	5,842	

SAVING TAXPAYER DOLLARS AND CURBING GLOBAL WARMING BY RE-ENERGIZING YOUR CITY

Mayors and other local public officials have a responsibility to reduce costs and spend taxpayer dollars wisely. They also are charged with taking steps to protect our environment. The success stories in this fact sheet demonstrate that local officials are meeting these obligations and building cleaner and more affordable communities by investing in smart energy solutions.

If every community in the United States took action with energy efficiency, renewable power and clean vehicle solutions, billions of dollars that are now literally being wasted could go to improving city services, bettering our schools, and re-building our aging infrastructure.

By reducing the rising costs of energy, Cool Cities are reducing the cost of government while solving global warming, one city at a time.

Now it's your city's turn.

For more information, including the Sierra Club's Guide to Local Global Warming Solutions, and to get involved in a Cool Cities campaign in your city, go to: www.coolcities.us.

Acknowledgements
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