

Resource & Climate Protection Plan to 2020

Recommendations & Plan

Austin Energy

Roger Duncan, General Manager



Resource & Climate Protection Plan to 2020

AGENDA & BACKGROUND

August 20, 2009



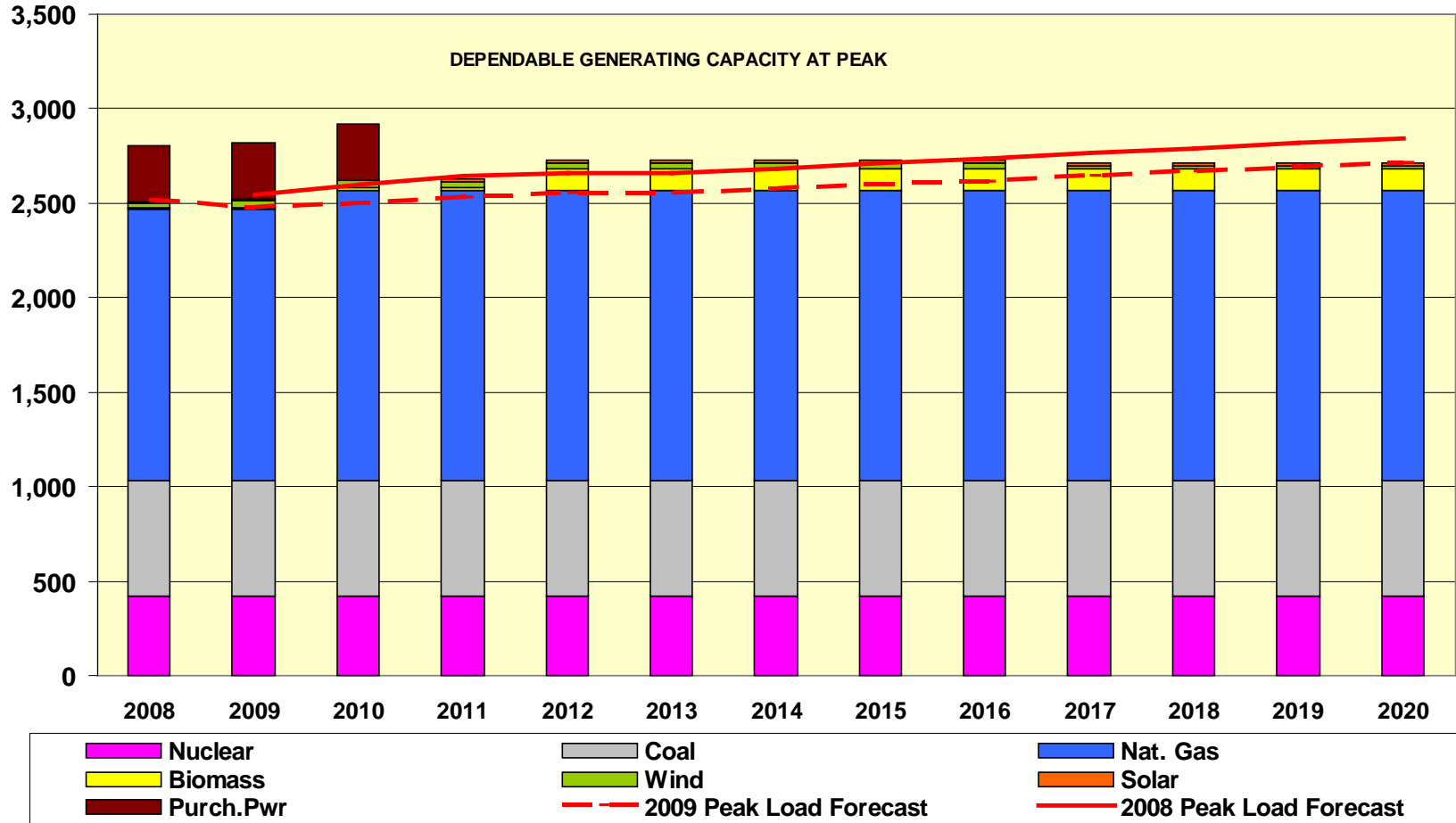
Agenda

- Background
- Public Process
- Austin Energy's Recommendation
- Next Steps

Key Planning Requirements

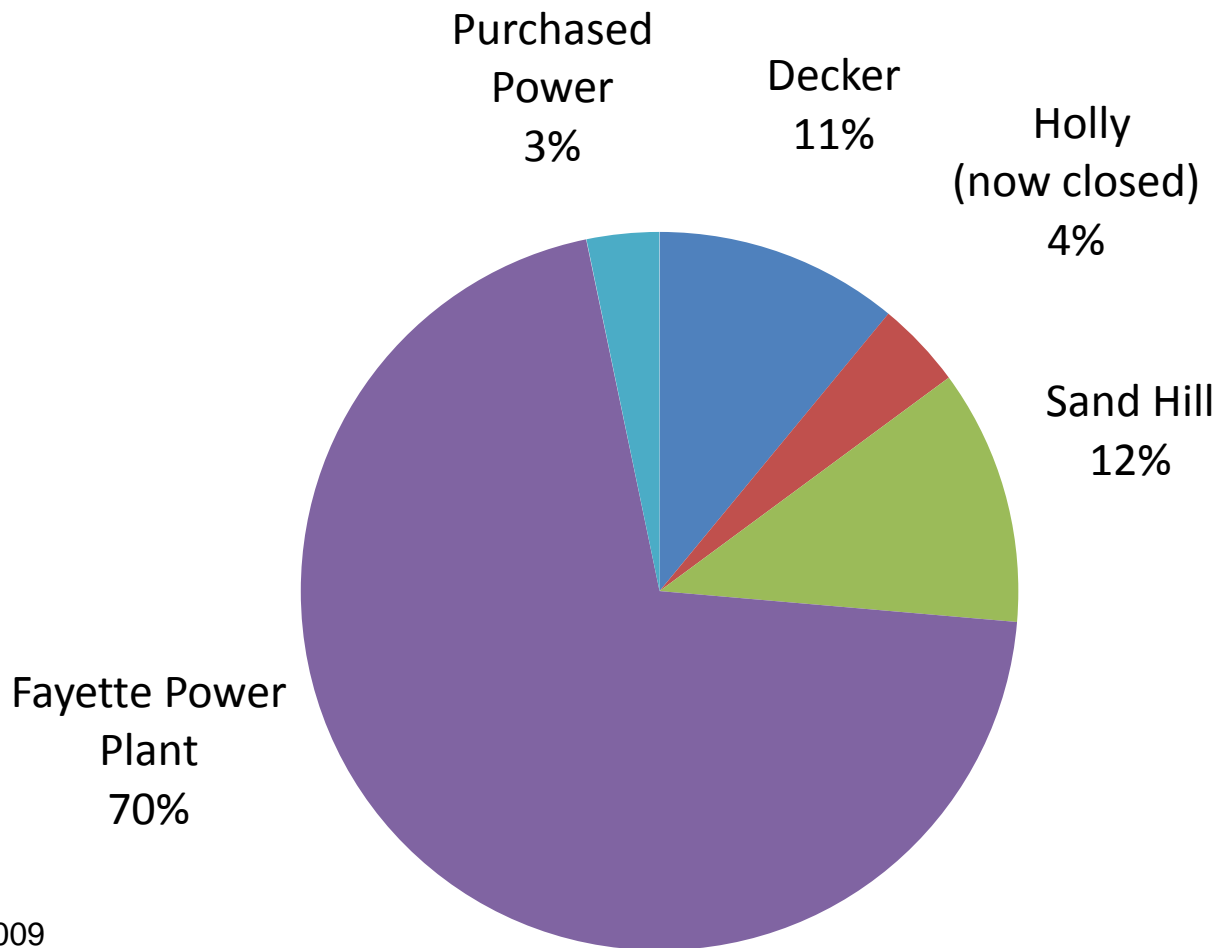
- Reliably meet demand and energy requirements
- Meet Council goals
 - 30% renewables by 2020
 - 100 MW solar by 2020
 - 700 MW efficiency by 2020
- Execute existing generation contracts (solar & biomass)
- No retirement of existing power plants before 2020

Current Resources vs. Load Forecasts



Austin Energy CO₂ Emissions Profile, 2007

Fayette Power Plant = Nearly $\frac{3}{4}$ of Power Plant CO₂ Emissions



Resource & Climate Protection Plan to 2020

PUBLIC PARTICIPATION PROCESS

August 20, 2009



Public Participation Process

- 8 Town Hall Meetings held from Oct 2008 through Feb 2009
- Town Hall Meeting attendance: 239
- Stakeholder meetings with the environmental community and our large commercial, industrial customers beginning in December 2008 (ongoing)
- **Austinsmartenergy.com** web site hits: 341,333
- Surveys submitted: 384
- 4 Employee Town Hall Meetings held with 282 attending
- 12 Stakeholder Meetings have reached approximately 500 members
- Launched “Change Your Generation” online energy game
- Two combined stakeholder meetings with over 100 attendees at each



Results of Public Participation Process

- More energy efficiency
- More solar
- More wind
- Less coal
- Split on nuclear
- Somewhat ambivalent on gas
- Information on cost of fuels and new technology



What's Important to Citizens

- Costs, especially for large customers
- Environmental groups say this is the time to stop using coal
- Across-the-board support for energy efficiency
- Transparency is strongly desired, and sometimes hard to satisfy
- Continuing opportunities to participate in the process

Strong Debate

- Around fuels and technologies, especially future prices and availability
- About impacts of regulatory changes
- About economics of power production

Scenarios Analyzed

	Meets 30% Renewable Energy Goal	Meets 100 MW Solar Goal	Includes 700 MW Energy Efficiency	Includes Existing Generation Units & Contracts	No Replacement of Existing Units before 2020	Meets Peak Demand and Energy Requirements	Allows any combination of supply and demand side options	Phased Replacement of Fayette Power Plant, 300 MW 2014, 300 MW 2020	Adds 200 MW Nuclear PPA in 2017	Eliminates Sand Hill Natural Gas Plant addition planned for 2015	Assumes 400,000 plug-in vehicles by 2025	Assumes solar technology breakthrough (60% reduction in capital costs by 2020)
Draft Energy Resource Plan "Strawman"	✓	✓	✓	✓	✓	✓						
<i>No Additional Generation</i>			✓	✓	✓	✓				✓		
<i>Lowest Bill Impact</i>			✓	✓	✓	✓	✓					
<i>Lowest Bill Impact Meeting Council Goals</i>	✓	✓	✓	✓	✓	✓	✓					
<i>Replace FPP: Renewables</i>	✓	✓	✓	✓		✓		✓				
<i>Replace FPP: Low Cost, Low Carbon</i>			✓	✓		✓	✓	✓				
<i>Waxman-Markey Draft CO2 Bill</i>	✓	✓	✓	✓	✓	✓						
<i>Strawman with Impact of the Electrification of the Transportation Sector</i>	✓	✓	✓	✓	✓	✓					✓	
<i>Strawman with Solar Technology Breakthrough</i>	✓	✓	✓	✓	✓	✓						✓
<i>Strawman with Nuclear Addition</i>	✓	✓	✓	✓	✓	✓		✓	✓			
<i>300 MW Solar DG</i>	✓	✓	✓	✓		✓	✓			✓		

Class Bill Impacts in 2020

	Current Rates	No New Builds	No New Builds w/o Prod Base Rate Decrease	Least Cost Results	Strawman	Replace FPP	Least Cost Council Goals	W-M Emissions Reductions	Electric Vehicles	Nuclear PPA	Pecan Street	Solar Breakthrough
	2009	2020										
Residential (1,000 kWh)												
Base	\$ 58.35	\$ 46.51	\$ 58.36	\$ 74.34	\$ 76.09	\$ 99.34	\$ 76.75	\$ 84.15	\$ 82.38	\$ 68.43	\$ 91.75	\$ 80.08
Fuel	36.53	44.08	44.08	30.30	34.64	28.32	29.61	31.72	32.18	40.07	29.10	32.91
Total	\$ 94.88	\$ 90.59	\$ 102.44	\$ 104.64	\$ 110.73	\$ 127.66	\$ 106.37	\$ 115.88	\$ 114.56	\$ 108.50	\$ 120.85	\$ 112.99
Percent Increase (decrease)		-4.5%	8.0%	10.3%	16.7%	34.5%	12.1%	22.1%	20.7%	14.4%	27.4%	19.1%
Monthly \$ Amt Increase (decrease)		(4.29)	7.56	9.76	15.85	32.78	11.49	21.00	19.68	13.62	25.97	18.11
General Service Demand (100 kW, 43,800 kWh)												
Base	\$ 2,122.40	\$ 1,691.77	\$ 2,122.61	\$ 2,704.15	\$ 2,767.61	\$ 3,613.39	\$ 2,791.80	\$ 3,060.93	\$ 2,996.62	\$ 2,488.94	\$ 3,337.26	\$ 2,912.78
Fuel	1,600.01	1,930.83	1,930.83	1,326.98	1,517.11	1,240.28	1,297.05	1,389.48	1,409.28	1,755.22	1,274.61	1,441.41
Total	\$ 3,722.41	\$ 3,622.60	\$ 4,053.45	\$ 4,031.13	\$ 4,284.72	\$ 4,853.66	\$ 4,088.86	\$ 4,450.40	\$ 4,405.90	\$ 4,244.16	\$ 4,611.87	\$ 4,354.19
Percent Increase (decrease)		-2.7%	8.9%	8.3%	15.1%	30.4%	9.8%	19.6%	18.4%	14.0%	23.9%	17.0%
Monthly \$ Amt Increase (decrease)		(99.82)	331.03	308.72	562.31	1,131.25	366.44	727.99	683.49	521.75	889.45	631.78
Industrial (5,000 kW, 3,300,000 kWh)												
Base	\$ 94,015.00	\$ 74,939.36	\$ 94,024.40	\$ 119,784.51	\$ 122,595.56	\$ 160,060.54	\$ 123,667.33	\$ 135,588.43	\$ 132,739.78	\$ 110,251.39	\$ 147,829.19	\$ 129,026.19
Fuel	116,952.00	141,142.89	141,142.89	97,001.56	110,900.29	90,663.48	94,813.79	101,570.12	103,017.90	128,305.87	93,172.97	105,366.53
Total	\$ 210,967.00	\$ 216,082.25	\$ 235,167.30	\$ 216,786.07	\$ 233,495.85	\$ 250,724.01	\$ 218,481.12	\$ 237,158.55	\$ 235,757.68	\$ 238,557.26	\$ 241,002.16	\$ 234,392.72
Percent Increase (decrease)		2.4%	11.5%	2.8%	10.7%	18.8%	3.6%	12.4%	11.8%	13.1%	14.2%	11.1%
Monthly \$ Amt Increase (decrease)		5,115.25	24,200.30	5,819.07	22,528.85	39,757.01	7,514.12	26,191.55	24,790.68	27,590.26	30,035.16	23,425.72
System Wide Rate Impact (2009-2020)		-3.2%	8.7%	8.8%	15.5%	31.5%	10.4%	20.2%	19.0%	14.1%	24.8%	17.5%



Resource & Climate Protection Plan to 2020

AE RECOMMENDATION

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AE Recommendation

Generation Resources in MW

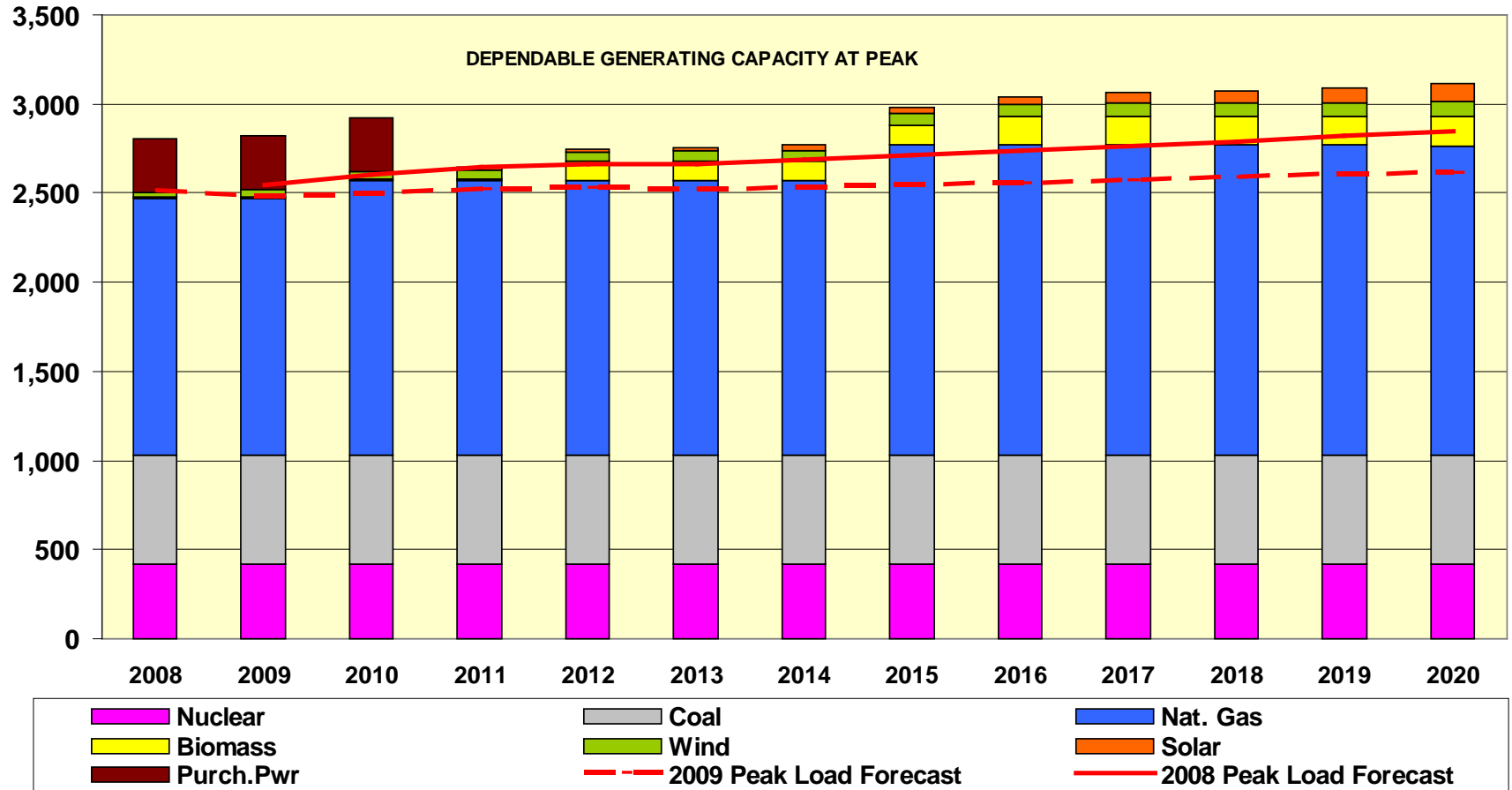
Year	Coal/Nuclear	Gas	Biomass	Wind	Solar	Renewable Portfolio
2009	1,029	1,444	12	439	1	12.6%
2010		100			30	12.5%
2011				(77)* / 200		17.7%
2012			100			22.2%
2013				150		26.2%
2014					30	26.4%
2015		200		100		28.7%
2016			50		20	31.6%
2017				(126)* / 200	30	35.0%
2018					20	33.6%
2019					30	33.7%
2020				115	40	36.7%
Total	1,029	1,744	162	1001	201	

* Wind contracts expire.



AE Recommendation

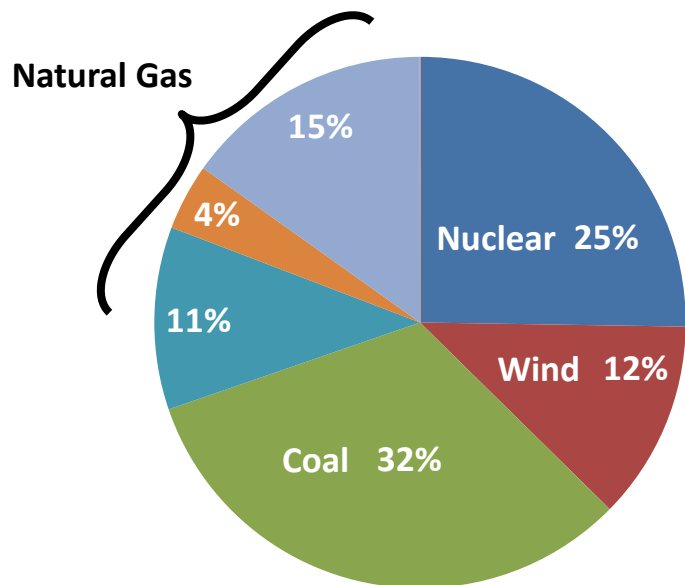
Generation Resources & Load Forecast



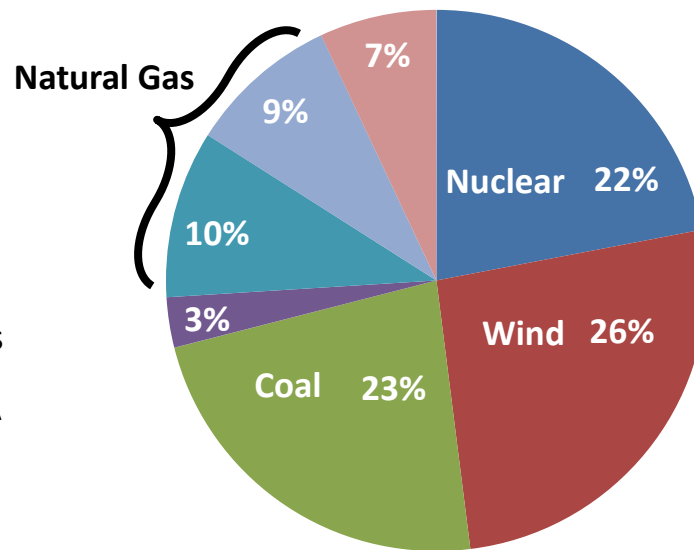
AE Recommendation

Energy Mix – 2009 vs. 2020

2009



2020

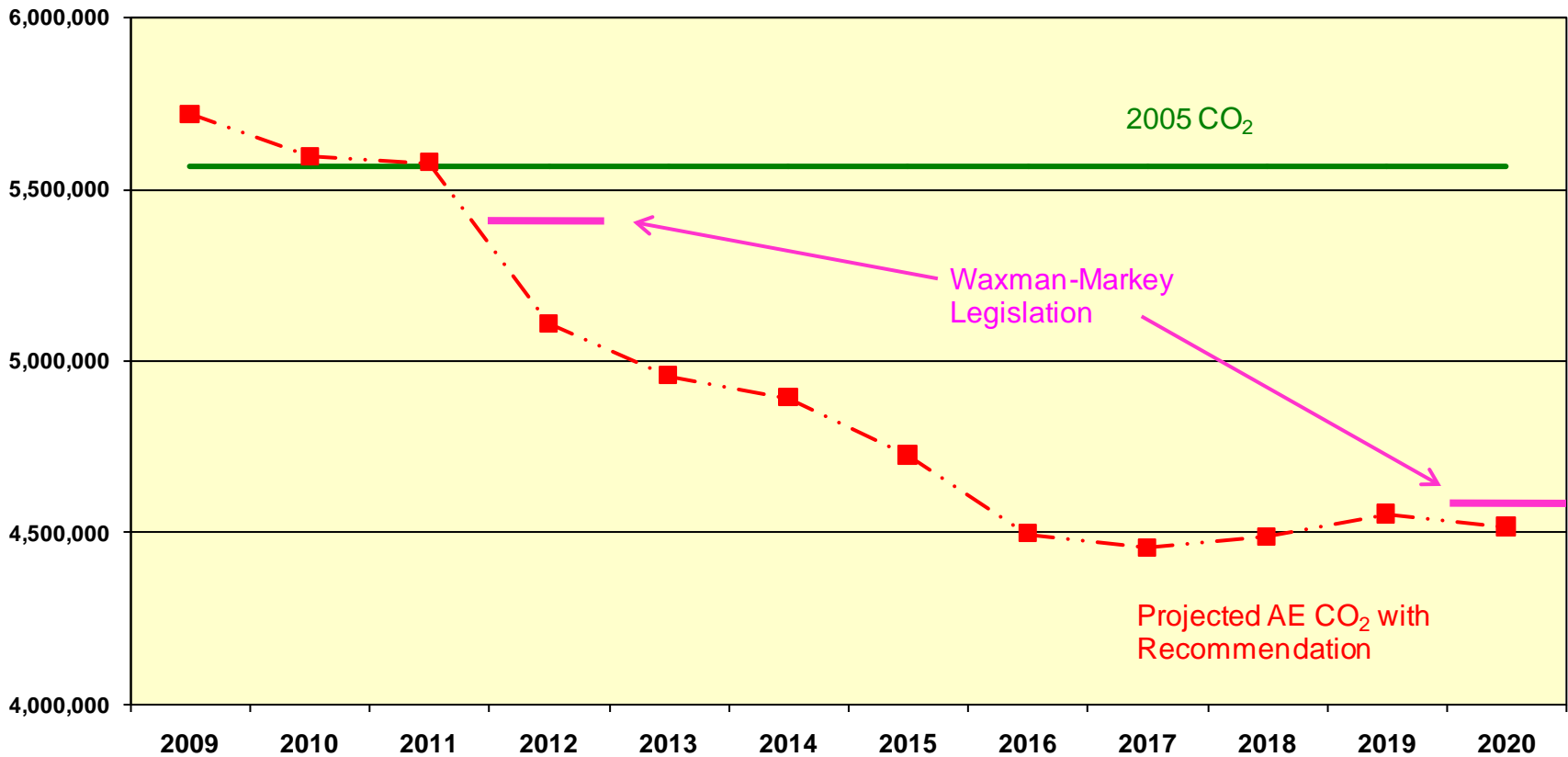


- Nuclear
- Wind
- Coal
- Solar
- Natural Gas
- Market PPA
- Market
- Biomass

AE Recommendation

CO₂ Emissions

Tonnes



August 20, 2009



AE Recommendation

Goals Summary

Proposed 2020 Goals

- Increase renewable energy goal to 35%
- Increase energy efficiency goal by 100MW to 800MW
- CO₂ reduction target of 20% below 2005 level

AE Recommendation

Estimated Rate Impacts

Estimated impacts associated with increased generation requirements, in 2020.

	Residential	General Service	Industrial
Demand/Energy Used	1,000 kWh	100 kW/ 43,800 kWh	5,000 kW/3,300,000 kWh
Increase over 2009	22.0%	19.2%	11.7%
Bill Impact	\$21	\$717	\$24,684

- Total capital expenditures to 2020 of \$2.67 billion
- No near term base rate impacts

Resource & Climate Protection Plan to 2020

PLAN COMPONENTS

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Energy Efficiency

1st priority for meeting new load growth

- Increase 700 MW Goal by 2020 established in 2007 to 800 MW by 2020
- Continue building code changes for Zero Energy Capable Homes (ZECH) homes by 2015
- Conduct combined heat and power potential study
- Develop plan for distribution system efficiency improvements
- Implement innovative rate design changes for energy efficiency, including dynamic pricing
- Refocus on base load efficiency programs that reduce carbon
- Conduct new energy efficiency potential study
- Develop plan for local contractor, M/WBE contractor, and veterans opportunities
- Analyze impacts and opportunities resulting from Energy Conservation and Disclosure Ordinance



Wind

Increase wind capacity to 1,000 MW by 2020

- Seek ownership of wind resources
- Pursue compressed air energy storage
- Support increased transmission capacity in ERCOT
- Investigate other wind energy deployment and storage strategies

Solar

Double Solar goal to 200 MW by 2020

- Develop a portfolio approach to siting, financing and ownership
- Promote solar thermal hot water use
- Develop incentives and strategies for local manufacturing capacity
- Develop solar energy storage strategy
- Plan for development of full on-site solar energy potential in Austin

Biomass

Add 50 MW biomass capacity by 2020

- Study small facility options
- Continue to investigate biomass co-firing at Fayette Power Plant

Natural Gas

- Maintain current gas units of 1,544 MW
- Add 200 MW combined-cycle gas turbine (CCGT) at Sand Hill
 - Use reclaimed water for cooling new CCGT
 - Utilizes existing expansion option
- More efficient plant offers:
 - Fuel savings of approximately \$130M by 2020
 - CO₂ reductions of approximately 1 million tonnes by 2020
- Dispatchability balances variable renewable and energy efficiency resources



Coal

Generation plan should reduce Fayette Power Plant capacity factor to 60% by 2020

- Sets stage for eventual modification, closure, or sale
- Continue to investigate co-firing at Fayette Power Plant
- Investigate further NO_x reductions and carbon capture and storage retrofits

Nuclear

- Continue participation in STP Units 1 and 2
- No participation in STP Units 3 and 4
- Evaluate nuclear power purchase agreements if offered

Geothermal & Other

- Investigate geothermal resource acquisition
- Assess non-solar renewable resources in service area

Complementary Strategies

- Energy Storage - Develop a comprehensive energy storage strategy
- Smart Grid & Pecan Street - Accelerate development and deployment of smart grid
- Electric Transportation - Continue development of electric vehicle incentives and utility integration for storage and other opportunities
- Economic Development - Develop and implement green collar job initiatives to grow and strengthen the local workforce

Resource & Climate Protection Plan to 2020

CLIMATE PROTECTION PLAN

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Climate Protection Plan – “CO₂ Plan”

Reduce CO₂ emissions to 20% below 2005 level by 2020

- *AE Recommendation* is a plan that will reduce stack emissions under Austin Energy’s control
- Austin Energy may be limited in its ability to reduce emissions at the power plants
- *AE Recommendation* may not be the lowest cost way to reduce CO₂ footprint

Direct Emissions Reductions

AE Recommendation is a plan that will reduce stack emissions under Austin Energy's control

- Energy efficiency and renewable resources reduce load of fossil fuel plants
- CCGT, 200 MW – Will displace less efficient generation resources (e.g., Decker) and provide balancing resources for renewable energy generation
- Expected to reduce Fayette Power Plant capacity factor to 60% by 2020—this is the intended result, setting the stage for closure, sale or modification
- Designed to accomplish a direct-emissions approach to compliance with likely federal regulatory requirements



Operational Considerations

Austin Energy may be limited in its ability to reduce emissions at the power plants

- LCRA options regarding Fayette Power Plant operations
- Both LCRA & ERCOT have a say in Fayette Power Plant closure
- ERCOT can dispatch any generator for grid reliability purposes

Financial Considerations of CO₂

AE Recommendation may not be the lowest cost way to reduce CO₂ footprint

- Ability to buy / sell CO₂ allowances or offsets
- Environmental dispatch vs. economic dispatch
- May forego off-system sale revenues, with uncertain environmental benefits
- New technologies (e.g., carbon capture and sequestration “CCS”)

Water Consumption

AE Recommendation expected to reduce water use intensity from .72 gal/kWh in 2007 to .57 gal/kWh in 2020 (total consumption in 2020 of about 6 billion gal)

- Energy efficiency, solar PV, and wind require no water
- Biomass, geothermal, and solar thermal will require water
- Natural gas units are more efficient and use reclaimed water
- Reduced capacity factor at Fayette Power Plant reduces water consumption



Business Model

Address deployment of distributed energy resources, especially self-generation

- Investigate “unbundled rate structure”
- Move from volumetric pricing to more fixed-cost pricing
- Address fuel portion of General Fund Transfer
- Develop plan for future GreenChoice[®] offerings
- Prepare for rate case in 2012

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NEXT STEPS

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Next Steps

- Risk analysis
- Town Hall & Stakeholder Meetings
- No urgent requirement