

Resource & Climate Protection Plan to 2020

Recommendations & Plan

Austin Energy

Roger Duncan, General Manager



Resource & Climate Protection Plan to 2020

AGENDA & BACKGROUND

August 18, 2009



Agenda

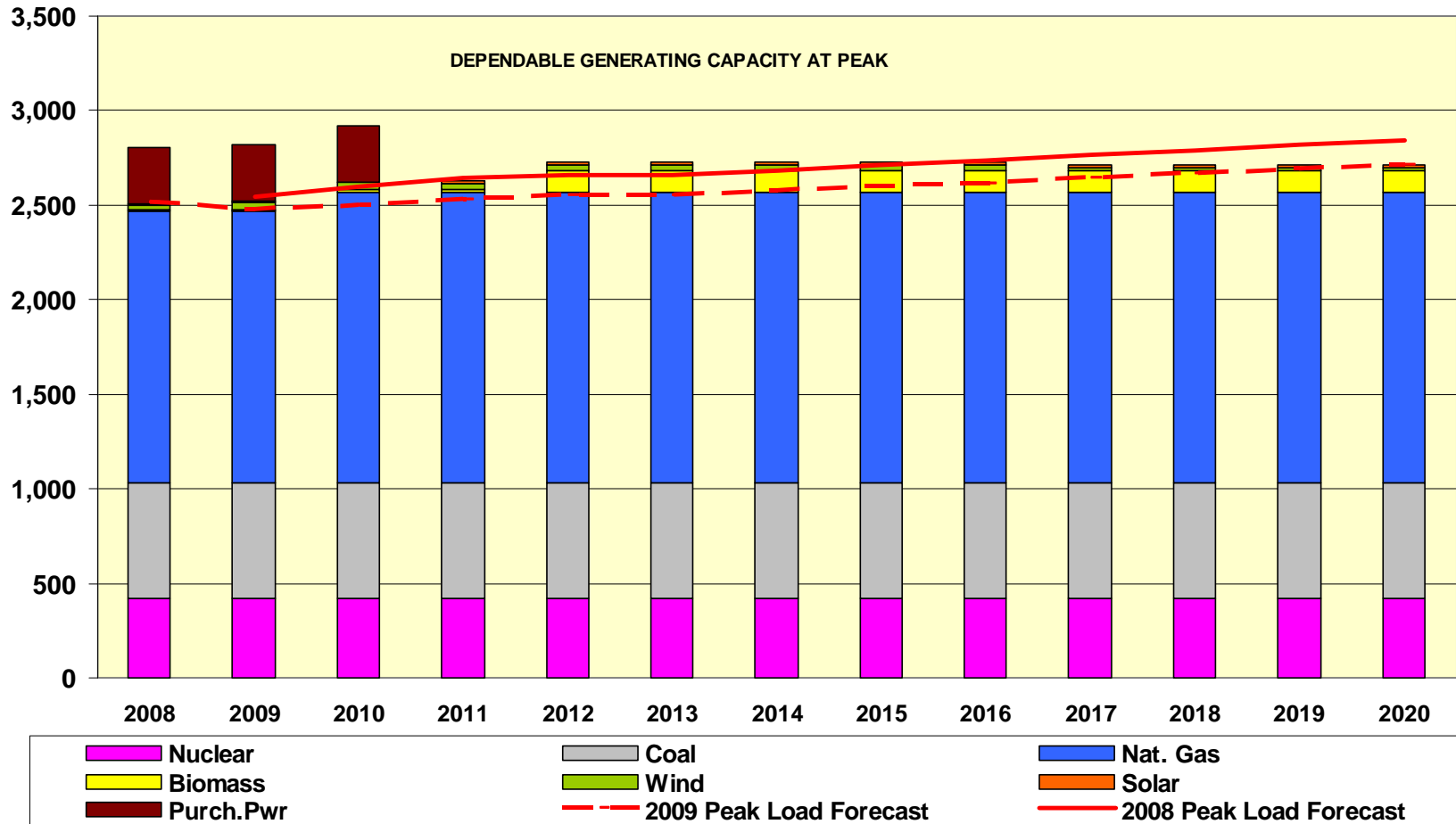
- Background
- Public Process
- Austin Energy's Recommendation
- Next Steps



Key Planning Requirements

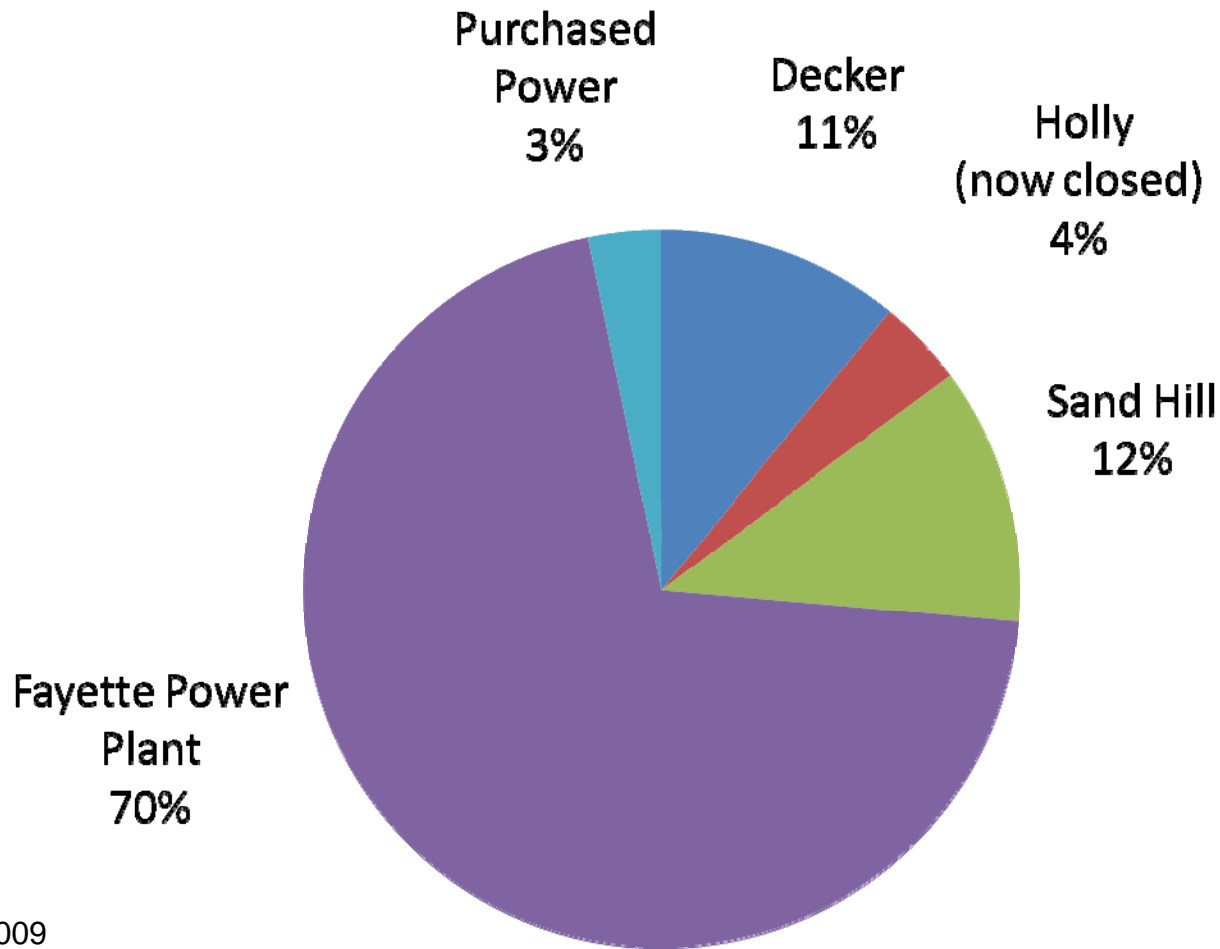
- Reliably meet demand and energy requirements
- Meet Council goals
 - 30% renewables by 2020
 - 100 MW solar by 2020
 - 700 MW efficiency by 2020
- Execute existing generation contracts (solar & biomass)
- No retirement of existing power plants before 2020

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 18, 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

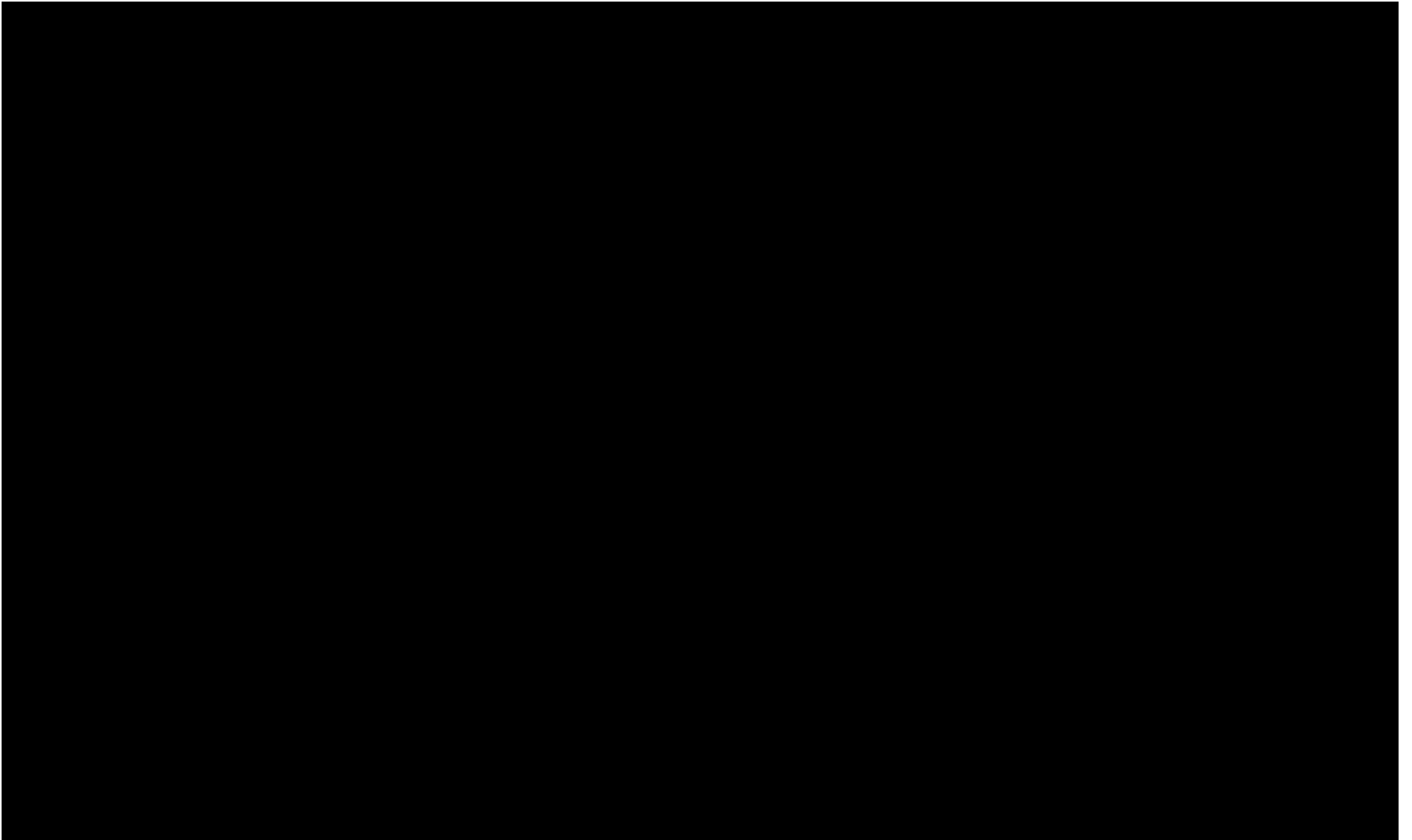
- Costs, especially for large customers
- Environmental groups say this is the time to stop using coal
- Across-the-board support for energy efficiency
- Transparency is strongly desired, and sometimes hard to satisfy
- Continuing opportunities to participate in the process



Strong Debate

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

Scenarios Analyzed



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%



Resource & Climate Protection Plan to 2020

AE RECOMMENDATION

August 18, 2009



AE Recommendation

Generation Resources in MW

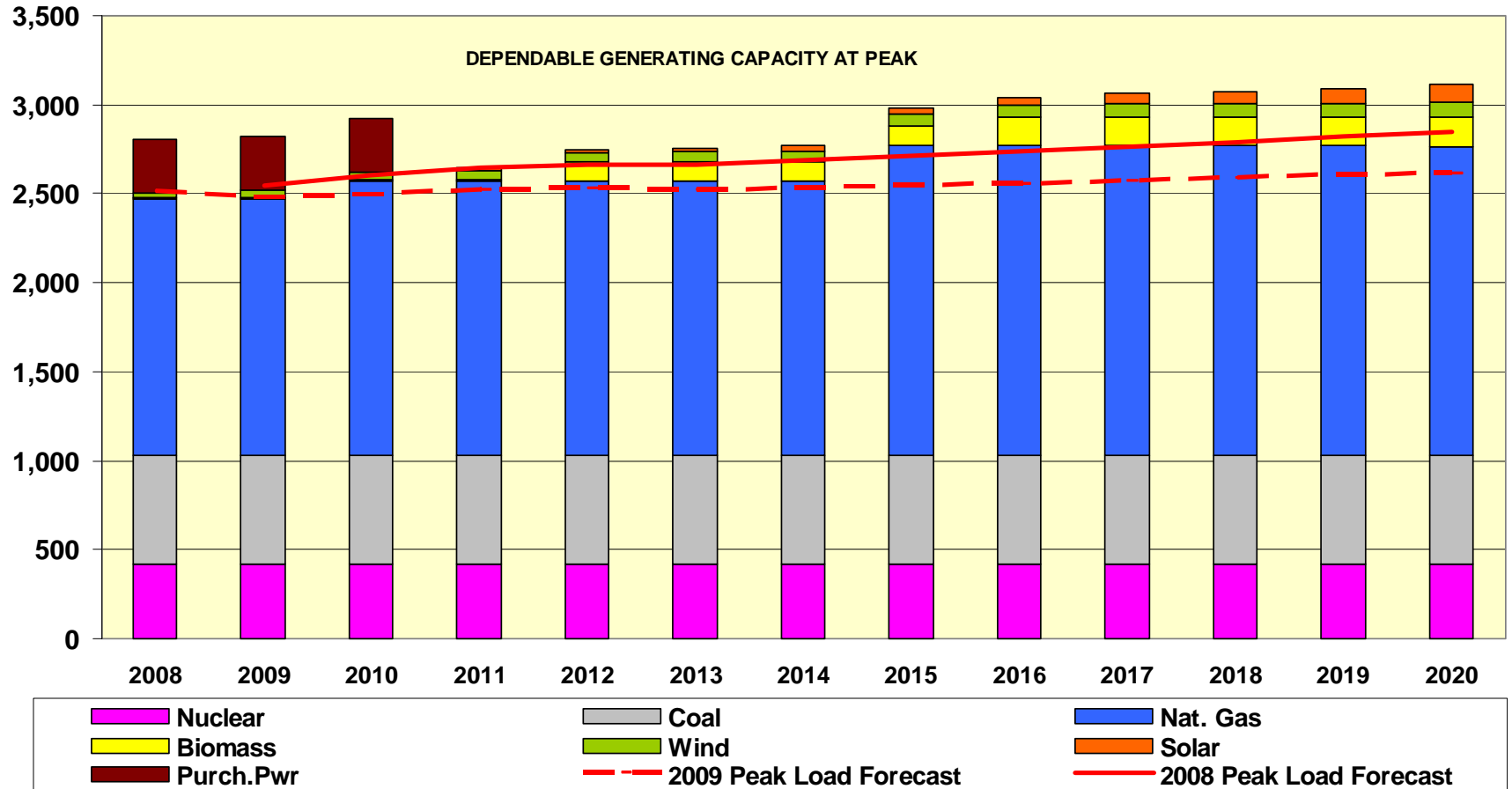
Year	Coal/Nuclear	Gas	Biomass	Wind	Solar	Renewable Portfolio
2009	1,029	1,444	12	439	1	12.6%
2010		100			30	12.5%
2011				(77)* / 200		17.7%
2012			100			22.2%
2013				150		26.2%
2014					30	26.4%
2015		200		100		28.7%
2016			50		20	31.6%
2017				(126)* / 200	30	35.0%
2018					20	33.6%
2019					30	33.7%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

* Wind contracts expire.



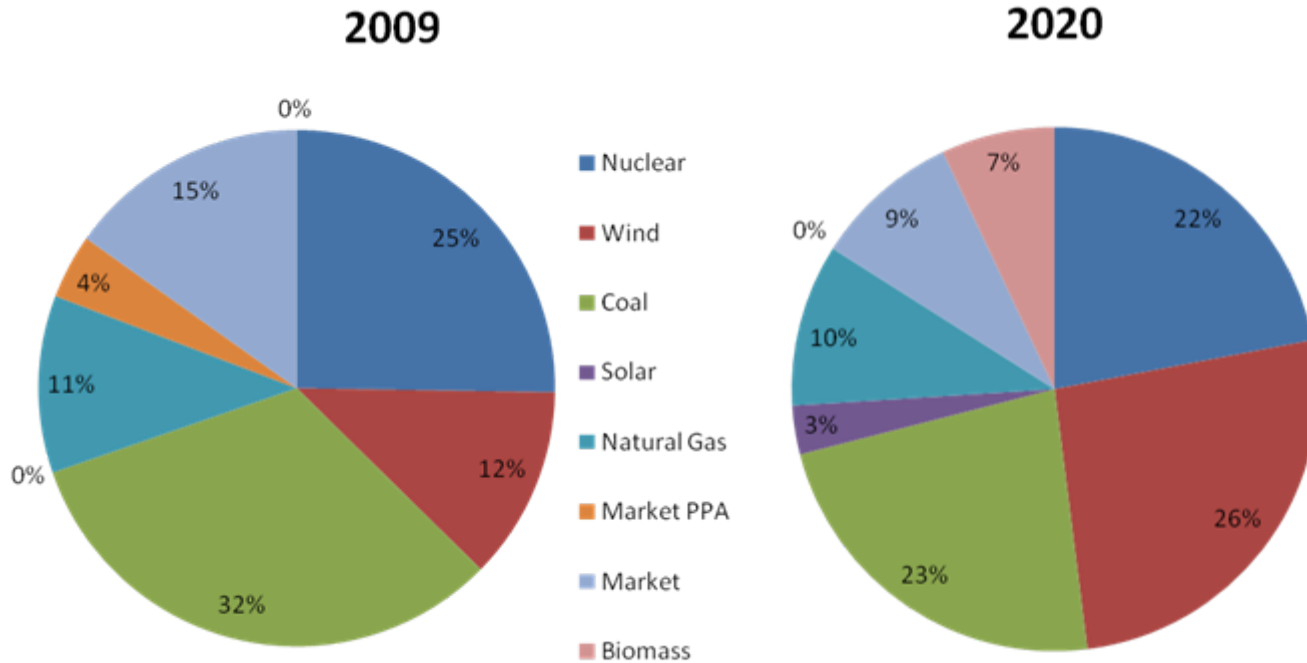
AE Recommendation

Generation Resources & Load Forecast



AE Recommendation

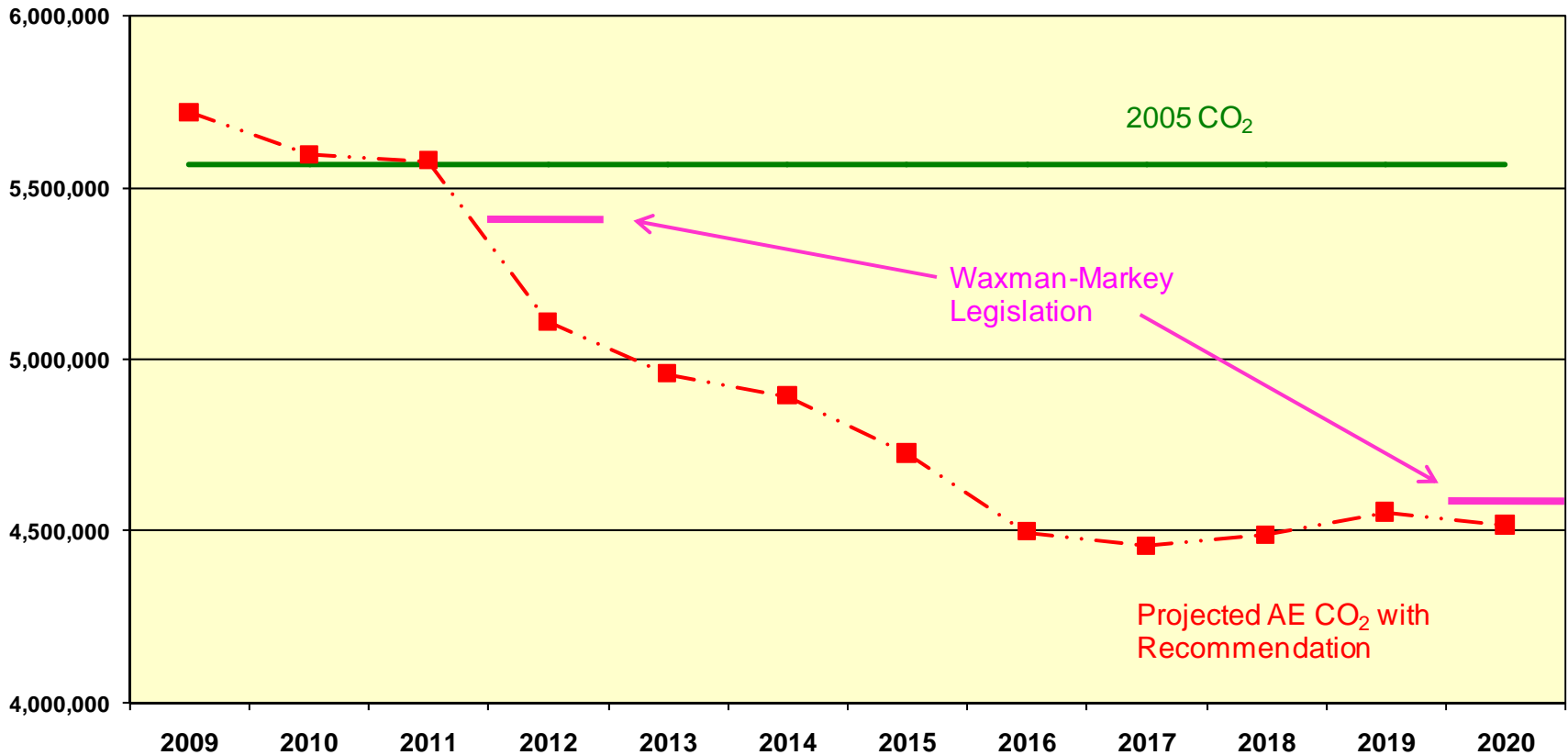
Energy Mix – 2009 vs. 2020



AE Recommendation

CO₂ Emissions

Tonnes



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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 (e.g. waste energy) 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

August 18, 2009



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 forgo 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

Resource & Climate Protection Plan to 2020

NEXT STEPS

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Next Steps

- EUC, RMC, Task Force meetings
- Risk analysis
- Town Hall & Stakeholder Meetings
- No urgent requirement