

Late Backup

Future Energy Resources and CO₂ Cap & Reduction Planning



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General Manager

July 2008

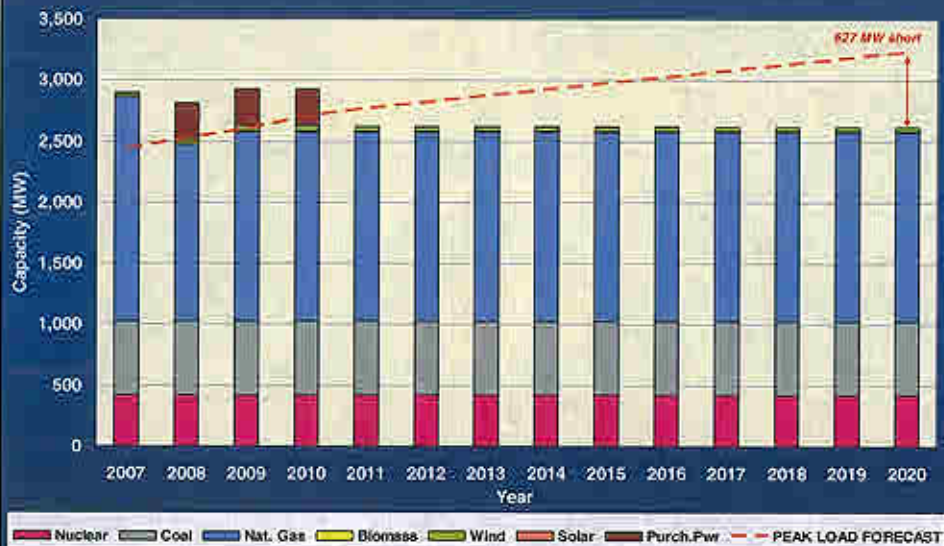
Agenda

- **Generation Resources**
 - Load Forecast
 - Goals, Options and Challenges
 - New Resources
- **CO₂ Cap and Reduction**
 - CO₂ Emissions
 - Goals, Options and Costs

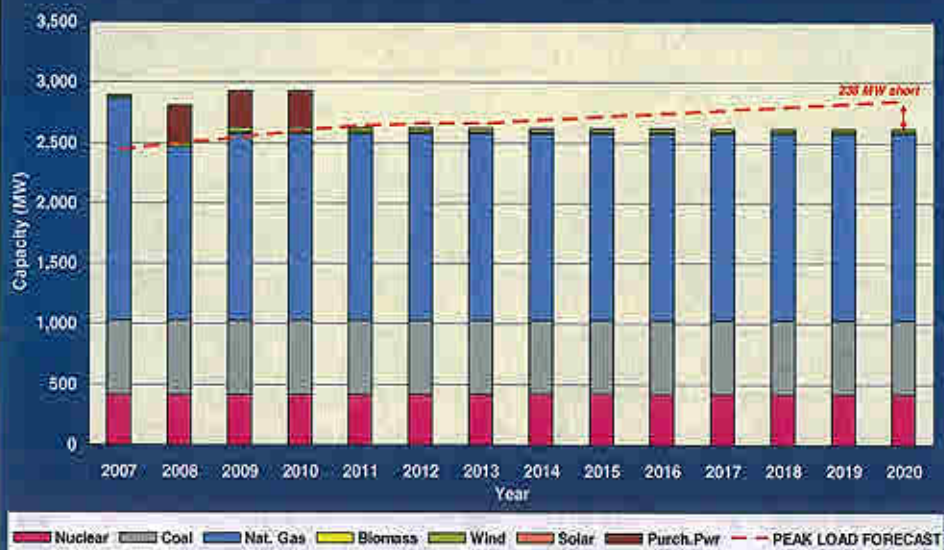


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Load Forecast Without Conservation



Load Forecast With Conservation



City Council Goals for Austin Energy

- CO₂ cap and reduction plan
- New generation carbon-neutral
- 700 MW of energy savings by 2020
 - Enhance building codes for zero energy-capable homes and buildings by 2015
- 30% renewables, including 100 MW of solar, by 2020



Options for Meeting Load Forecast

Options

Challenges

Additional Conservation	————→	Achieving > 700 MW
Additional Renewables (wind, solar, biomass)	————→	Congestion, Availability and Cost
Nuclear	————→	Availability, Capital Cost and Waste Disposal
Coal with CO ₂ capture	————→	Immature Technology
Natural gas	————→	Fuel Supply and CO ₂



Preliminary Recommendations (in MW)

Year	Coal/Nuclear	Gas	Biomass	Wind	Solar
2008	1,029	1,444	12	274	1
2009		100		165	
2010					30
2011				(77)* 100	
2012			100		
2013		200			
2014				50	20
2015				100	
2016			100		
2017				(126)* 200	20
2018					
2019				50	30
2020				110	
Total	1,029	1,744	212	(203) 1,049	101

Total Additional Resources 1,375 MW

* King Mountain and Sweetwater wind contracts expire.



Load Forecast with Sand Hill Expansion and Future Renewables



Sand Hill Combined Cycle Expansion

- Uses existing expansion option to save money and time:
 - \$160M in construction cost over 3 years
 - \$278M in fuel savings offsets expansion cost
 - Gas pre-pay strategy to secure fuel supply, reduce gas cost
 - Local resource avoids transmission congestion cost
 - Reduces CO₂ by 1.6M tons through 2020



Renewable Energy: Biomass

- East Texas logging residue and mill waste
- West Texas mesquite harvesting and gasification
- Limited landfill gas opportunities



Renewable Energy: Wind

- Continue to expand wind portfolio
- Explore Gulf Coast wind opportunities
- Include ownership and development
- Support transmission construction
- Explore low-power wind technology
- Explore energy storage for wind



Renewable Energy: Solar

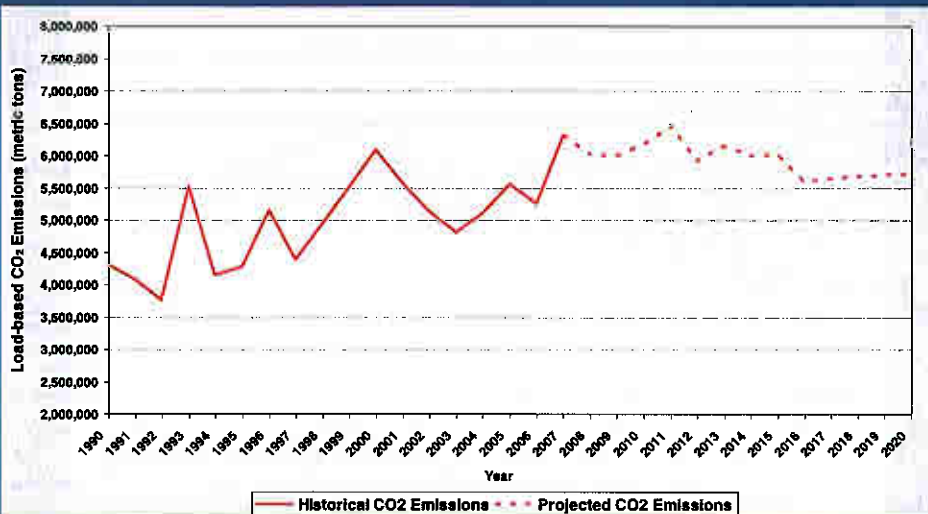
- 30 MW facility at Webberville
(purchase power agreement or PPA)
- Plan for covering PV applicable
space in Austin (public/private partnerships)
- Large-scale West Texas solar plant
(joint utility project)
- Energy storage for solar



Webberville Solar Site Layout

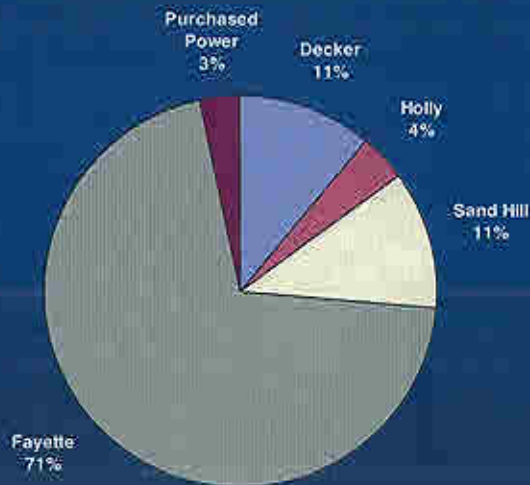


Austin Energy CO₂ Footprint Profile

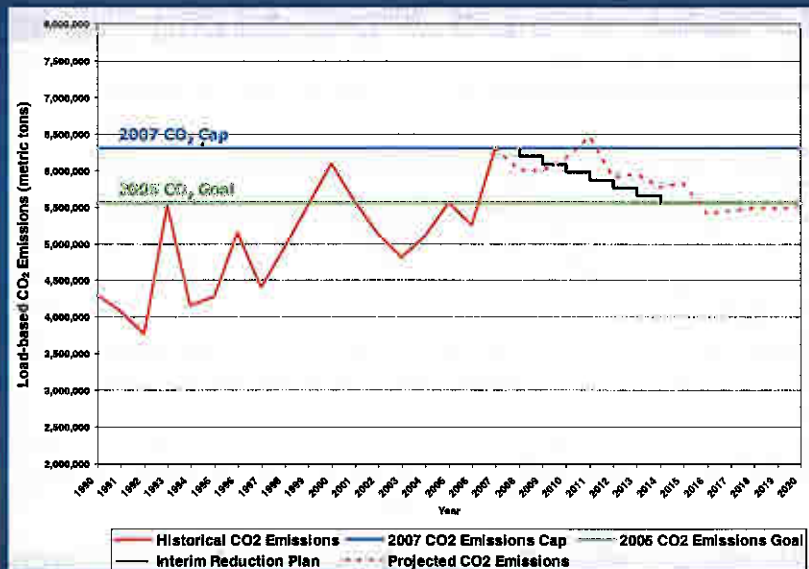


FPP is Nearly $\frac{3}{4}$ of Austin Energy's CO₂

2007 Emissions Profile



CO₂ Cap & Reduction Plan 2008-2014



Options for Reducing CO₂ Footprint 2010-2014

- Operate generation fleet normally and purchase offsets for CO₂ emissions that exceed cap
- Replace coal with gas generation
- Combination of both



Carbon Offsets

- Can be purchased to mitigate our GHG emissions
- Are created from a project that reduces CO₂ and other GHGs in the atmosphere
- Every metric ton (2200 lbs) of GHG emissions reduced results in the creation of 1 carbon offset
- To ensure quality, offsets should be 3rd party-certified—CA Climate Action Registry (CCAR), Voluntary Carbon Standard (VCS)



Examples of Offsets

- Reforestation or avoided deforestation
- Cogeneration with methane from landfills or feedlots
- Reduced fertilizer use in agriculture or no-till agriculture

Offset Cost Summary

Year	Offset Only Cost (in millions)	Fuel Switch + Offset Cost (in millions)
2008	\$0	\$0
2009	\$0	\$0
2010	\$1.6	\$41.9
2011	\$5.3	\$104.8
2012	\$1.4	\$29.0
2013	\$2.9	\$47.7
2014	\$7.6	\$29.8
Cumulative	\$18.8	\$253.2



Preliminary Recommendations to Mitigate CO₂ Footprint

- Operate generation fleet normally
- Purchase offsets for CO₂ emissions that exceed cap



Summary

- Add 200 MW Combined Cycle at Sand Hill by 2013
- Cap CO₂ at 2007 level
- Reduce CO₂ to 2005 level by 2014 through offset purchases
- 30% renewables, with 100 MW solar, by 2020
- 700 MW energy savings by 2020



Next Step: Public Participation Plan

- **Public information campaign**
 - Resource guide on current energy resources, options
 - Brochures, bill stuffers, ads, Channel 6 video
 - Web site to inform and solicit public input
 - Documents, Calendar, Blog
- **Broad-based, inclusive public input process**
 - Town Hall Meetings
 - Presentations, discussions with stakeholder groups
 - Formation of Advisory Group from stakeholder representatives

