AUSTIN'S CLEAN ENERGY FUTURE

Austin Energy's 2024 Climate Protection & Generation Resource Plan

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Austin Energy Has Been A Leader

…But we can't afford to fall behind Cleveland.

- AE has been leader on EV, EE, SOLAR, WIND, CARBON REDUCTION
- We must continue this leadership role on these and become carbon neutral
- Other cities are making commitments to renewable power and carbon reductions
  - Seattle: Carbon neutral by 2050
  - Chicago: Reduce emissions by 80% from 1990 levels by 2050 for both governments and communities
  - Cleveland: Reduce emissions by 80% below 2010 levels by 2050, with interim 16% reduction by 2020. Currently 50% of Clevelanders on 100% renewable power.
  - Cincinnati: Reduce emissions by 84% by 2050 and by 8% within 4 years. City aggregation
  - Austin – City Council adopted new resolution of carbon neutrality by 2050; AE current goal of 35% renewable energy and 20% reduction by 2020

Austin Energy 2024 Plan Must:

- Address climate change emissions & climate change impacts ;
- Put City of Austin on glidepath to zero carbon from the utility by 2035, to be zero carbon for the city by 2050;
- Bolster efficiency, renewable and climate change goals;
- Be affordable and equitable for ALL residential, commercial and industrial consumers;
- Address our oldest and dirtiest fossil fuel plants; and
- Take advantage of newer technologies like demand response, storage, and solar power.

Our 2025 Scenario:
Put Austin On Zero By 2050 Glidepath

Character	Value
% of Annual Electricity Demand Met	100%
% of Peak Hourly Demand Met	97% generation, 3% demand response
Carbon Emissions (metric tons)	1,158,216
% reduction in utility carbon emissions from 2005 levels	81 %
% Generation from Renewables in 2024	62.4%
% Capacity from Renewables in 2024	61.3%
Annual Fuel Cost	280
Total Capital 30-year Cost (including PPAs)	$6.5 billion

Our Scenario:

High Renewable, High Efficiency, Low Fossil Fuel, Low GHG

Character	Value
% of GHG Emissions Reduced	81%
% of Water Consumption Reduced	37%
Demand Side (Efficiency, Green Buildings and DR)	1200 MWs, including 200 MWs DR
Total Solar in 2024	500-600 MWs
Total Wind in 2024	1,500 MWs
Local / Utility-Scale Storage in 2024 New Gas by 2024	400 MWs 200 MWs

Dealing With Our Oldest And Dirtiest

- Coal power is dated
  - We envision a three-year phased retirement between 2015 and 2018 with a priority to severely curtail use in non-peak months.
  - By end of 2018, a total retirement of one unit.
  - Negotiations with LCRA and ERCOT process could delay our scenario slightly
- Decker is not used that much and is inefficient
  - We support AE's commitment to to plan retirement by 2017
  - Our scenario anticipates retiring Decker by end of 2018.

Sandhill Natural Gas Unit

- Existing plant is relatively efficient and is being used – 40% of time.
- The previous Generation Plan endorsed by previous Task Force – including Sierra Club – and Council supported the build-out of Sand Hill with a 200 MW additional steam unit.
- We support adding a 200 MW steam cycle plant to existing combined cycle plant to increase capacity and make existing plant more efficient.
- AE should reuse City of Austin water and also explore dry cooling.
- AE should look at potential of inlet cooling to boost production and other newer technologies (low Nox burners, etc).

Solar: Onsite, Offsite and Community

- Increased use of solar and wind are among the most cost efficient technologies for decreasing carbon emissions and keeping ratepayer money in Texas.
- We support LSAC recommendation to raise 2020 goal to 400 MWs, including 200 Utility-scale and 200 MWs local solar.
- Through 2016, we should continue to take advantage of third-party PPA and their tax benefits
- We support Value of Solar rate, but tweaks needed such as multi-year commitment
- After 2016, we should explore owning our own utility-scale solar plant.
- AE should look at and test out multiple models of community solar
- We should set additional long-term solar goal of 600 MWs by 2024, with some flexibility on local vs. utility-scale
- Equity and accessibility important and financing options – PACE & Leasing – should be explored

Renewables

- We set 35% energy renewable goal in 2011 and thought it ambitious; we were wrong and should meet it by 2016;
- We should set a higher goal – 50% by 2020 and 60% by 2024 should be modeled – we can do it.
- These renewable goals would include West & Coastal wind, onsite and large-scale solar and to the extent available geothermal.
- Large-scale hydro not realistic, though AE could explore use of instream and existing dam lowflow hydro to boost local production
- We do not support further development of biomass facilities

Energy Efficiency

- Existing goal of 800 MWs of EE and DR by 2020 from 2007 levels should be expanded to 1200 MWs by 2024.
- We should set a specific portion of goal toward low and moderate income residential members – we believe weatherization and CAP weatherization should equal at least 10% of total EE budget, and AE should add a moderate income EE program of approximately 5% of budget;
- Our modeling shows that this would correspond to a 7.5 MW goal for Low and Moderate Programs between 2015-2025 assuming a $5300 per Kw reduced; reducing costs of these programs could lead to significant expansion of this goal
- An auction approach should be used for larger scale projects letting bigger commercial and industrial clients compete, and caps should be raised.
- A PACE Property Assessed Loan Program Should Be Created
- Transparency – Better Reporting of AE's EE, DR and onsite Solar programs, require report similar to CPS Energy's STEP quarterly and annual reports

Demand Response

- Demand response and chilling stations should be expanded and used both to help manage the local distribution system but also to bid into the ERCOT energy, ancillary and emergency response markets.
- We would suggest that a minimum of 200 MWs of the 1,200 EE MW goal be for dispatchable, controllable DR – 50 MWs for Residential and Small Commercial and 150 MWs for larger commercial and industrial.
- 200 -300 MWs is possible assuming ERCOT study showing potential for 19,000 MWs of DR in total market and likelihood of 6,000 MWs
- AE could be using DR as a resource to make money for the utility and for the city and to keep prices low!

Energy Storage

- AE should take advantage of opportunities in advances in energy storage.
- Allow large-scale storage like CAES and batteries to participate in any future RFPs
- Consider a specific storage goal such as that enacted in California market (3% of Peak). In Austin's case 3% would be roughly 100 MWs
- Our scenario assumed a 300 MW large-scale CAES and 100 MWs of local storage (chilling stations and batteries)
- The exact mix of local storage and utility-scale will depend on demand growth and needs of system but we think 400 MWs by 2024 is reasonable

A New Gas Plant Beyond Sandhill?

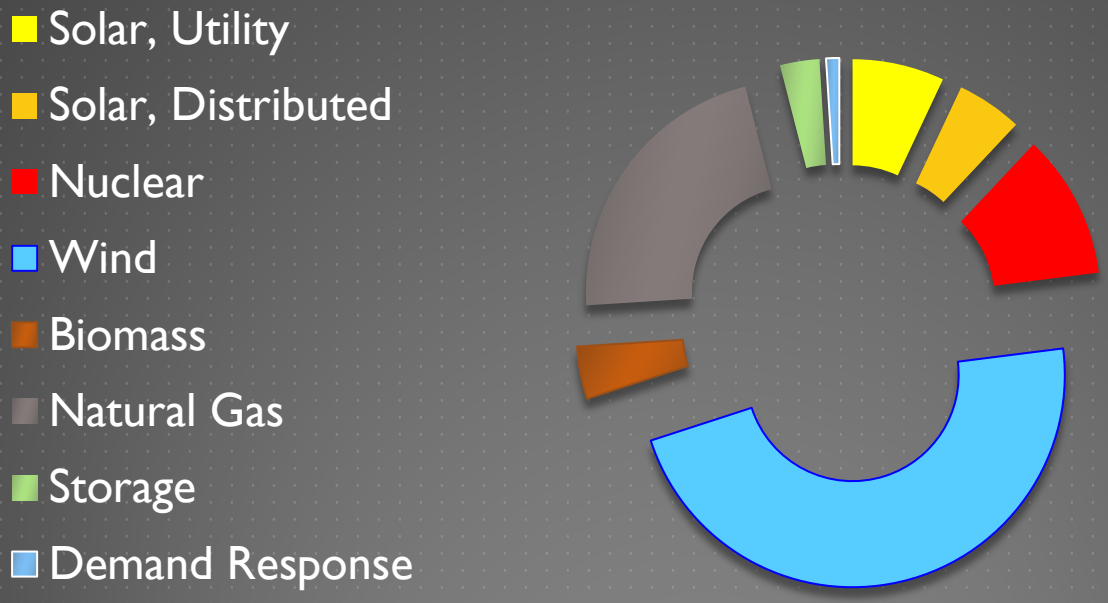
- Sierra Club is not convinced that even with the retirement of Fayette and Decker a new combined cycle or single-cycle gas plant is needed or warranted.
- AE would need to assess any future gas plant against the costs of a renewable-efficiency-storage plan as well as a renewable-efficiency-market power purchase plan.
- If a gas plant is included in a comprehensive low-carbon plan, AE should evaluate latest and greatest technologies, including a solar-gas hybrid plant, dry air cooling, inlet cooling storage, low NOx burners, and CCS.
- AE should seriously consider an RFP that would invite a large-scale storage alternative.
- Our model assumes 300 MWs of large-scale storage as an alternative to a new gas plant – however market power, local storage and other options are also possible.

Cooking Our Climate

- AE must do better than 20% reduction by 2020.
- Sierra Club suggests getting to at least 50% by 2020 and 60% by 2024 of carbon reduction to get us more than half way toward 100% net zero utility by 2035.
- Our own proposed scenario would achieve an 80% reduction by shuttering the coal plant and decker and only replacing it with one new 200 MW steam plant and storage, some of which could burn gas
- AE should work with gas producers on best practices to prevent methane and hydrocarbon leaks in the gas fields, and put community protection criteria in its selection process for natural gas suppliers for the utility.

An Austin Generation Plan We Can Be Proud Of.. 60% Renewable, No Coal, Limited Gas

% of Electricity Delivered, Year 2024



60% Renewable, 600 Solar Mw