



2016 Resource Plan Update

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EUC Resource Planning Working Group

EUC

Karen Hadden – EUC Chair & Working Group Chair

Brent Heidebrecht–EUC Vice Chair

Michael Osborne – Member EUC

Cary Ferchill– Member EUC

RMC

Leo Dielmann – RMC Chair

Cyrus Reed –RMC Vice Chair & Lone Star Sierra Club Representative

Kaiba White – Member RMC & Public Citizen Representative

Suzanne Vaughn – Member RMC

Industrial Customer Representatives

Todd Davey – NXP, Manager Corporate Services - Global Procurement

Betty Dunkerley – Hospital/large Commercial Representative

Other Community Members and Representatives

Paul Robbins – Environmentalist & Low Income Advocate

Bob Batlan – Low Income Representative

Janee Briesemeister – Low Income Advocate/Residential Customers

Carlos Castañeda – Attorney /Community Member

Rebecca Melancon - AIBA /small and midsize commercial customers

Richard Halpin – Faith Energy Action Team



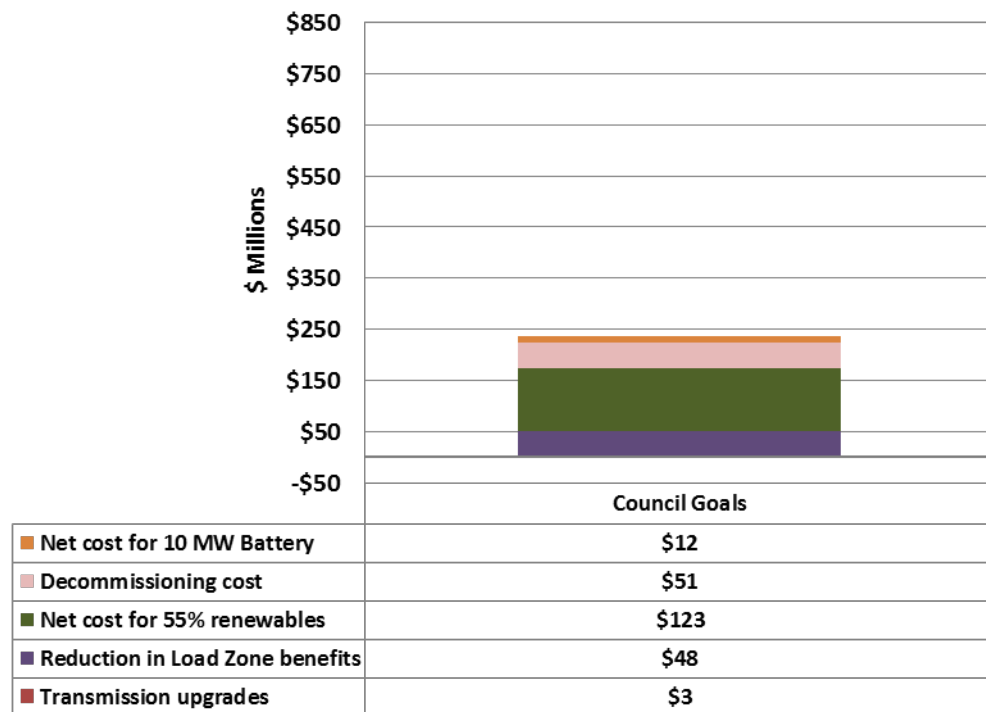
- Met for seven months
- Fourteen Meetings open to the public
- Achieved consensus on a new plan
- Supported by Austin Energy Staff



Cost of Achieving Council Goals from Current Generation Mix

- Subject to AE affordability goals the 2014 Plan includes
 - Ramp down & exit FPP in 2023
 - Retire Decker steam units by 2021
 - Add renewables to meet goals which includes 200 MW local solar
 - Upgrade Austin Energy transmission system to accommodate Decker retirement
- The cost of achieving council goals is the delta above the current generation mix (do nothing) scenario and does not factor the FPP debt/Operations & Maintenance (O & M) cost

20 Year Net Present Value (NPV) Delta*

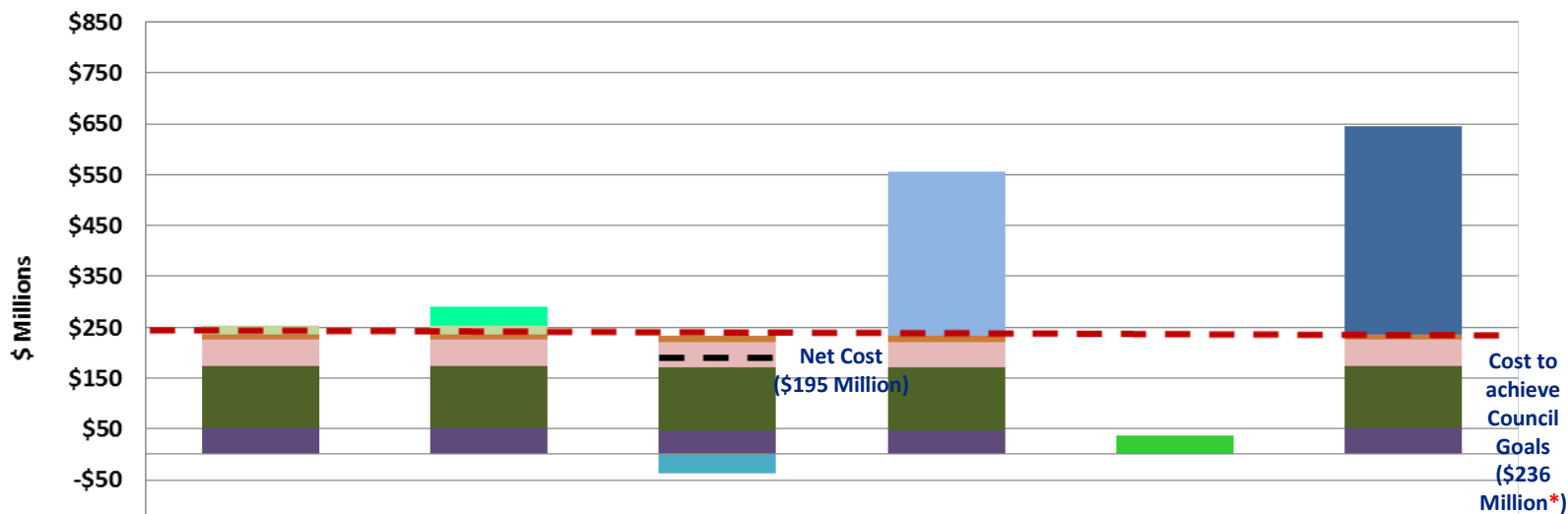


** This does not include the cost impact of retiring AE assets due to confidentiality reasons*



Other Results

20 Year Net Present Value (NPV) Delta*



	65% Renewables	75% Renewables	Add GTs	Add CC	Meet renewable goals through RECs	300 MW CAES
Net cost for CAES						\$408
RECs Cost					\$37	
Net cost for 75% renewables		\$37				
Net cost for 65% renewables	\$17	\$17				
Net cost for CC				\$323		
Net cost for GTs			-\$38			
Net cost for 10 MW Battery	\$12	\$12	\$12	\$12		\$12
Decommissioning cost	\$51	\$51	\$51	\$51		\$51
Net cost for 55% renewables	\$123	\$123	\$123	\$123		\$123
Reduction in Load Zone benefits	\$48	\$48	\$48	\$48		\$48
Transmission upgrades	\$3	\$3				\$3

* This does not include the cost impact of retiring AE assets due to confidentiality reasons



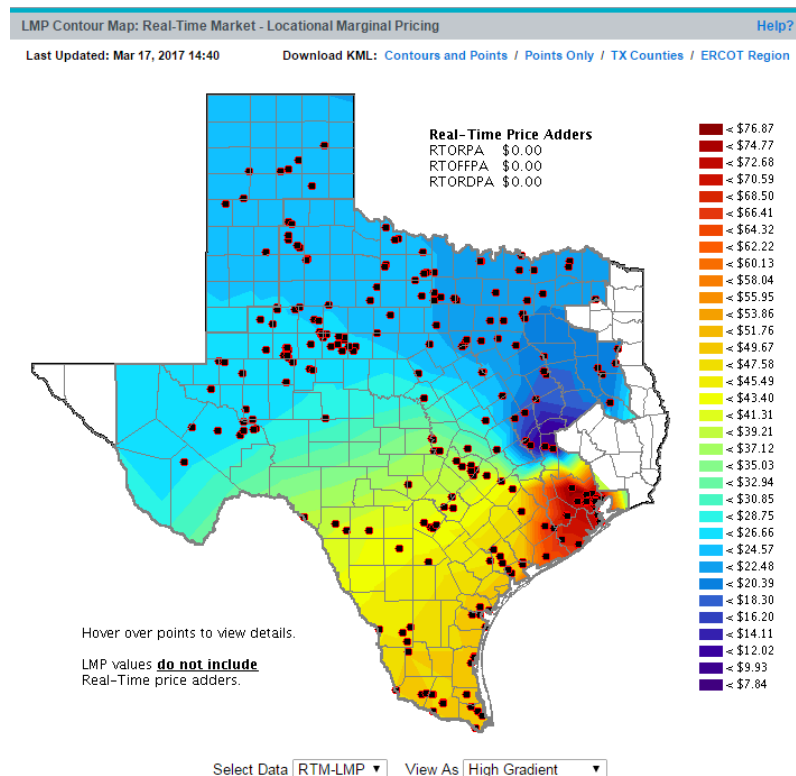
Factors that affect outcomes – Technology, Location, Regulatory Rules & Balance Sheet

■ Advances in Technology

- A solar contract negotiated in 2015 for 150 MWs over a 20 year period in West Texas may cost \$138 million more than a like project in 2017
- Wind industry moving towards larger turbine size which may lead to lower prices in certain areas
- Battery technology that is currently uneconomic in ERCOT could see advancements

■ Location matters in a Locational Marginal Pricing market structure

- Resources that are in a congested area may have a larger net cost to the customer than the PPA contract price indicates
- A resource that is not in a congested area may become part of a congested area over the life of the resource as new generation is added to ERCOT





Factors that affect outcomes – Continued

- Changes in Market Rules – Regulatory changes can impact existing resources and outlooks
 - Proposed changes in ERCOT market rules such as Marginal Line Loss proposal or changes to Operating Reserve Demand Curve (ORDC) – if approved, will reduce the value of remote resources like wind and solar
 - Trade agreement changes, such as the recent Solar Trade Complaint filed by Suniva with the ITC, could temporarily reverse the trend in declining solar prices
 - PTC for wind is winding down which could increase wind PPA prices
 - Environmental regulations, such as the Clean Air Plan, could increase the value of renewable contracts
- Balance Sheet Risk – Maintaining debt coverage ratios and debt ratings
 - New rating agency treatment of Power Purchase Agreements will require rate support for PPAs in future years
 - Build versus buy will require debt issuance



EUC Resource Plan Working Group Recommendations

The EUCWG reaffirmed that all recommendations in the plan are subject to AE affordability goals

Generation

- **Renewable Energy Target:** Commit to 65% renewable energy by the end of 2027, and study the possibility of a 75% and 80% goal for 2027.
- **Decker Power Plant:** Target ceasing operations and beginning retirement of the Decker steam units, assuming ERCOT approval:
 - Steam Unit 1 after summer peak of 2020
 - Steam Unit 2 after summer peak 2021
- **Fayette Coal-Fired Power Plant:** Affirm the previous goal, established in 2014, to begin the retirement of Austin Energy's portion of the Fayette Power Project (FPP), beginning by the end of 2022.



Recommendations - Continued

Local Solar:

- **Maintain Existing Local Solar Goals:**
 - 110 MW by the end of 2020 (at least 70 MW customer-sited)
 - 200 MW by the end of 2025 (at least 100 MW customer-sited)
- **Local Solar Incentive Budgets:**
 - Commit to \$7.5 million per year for FY18 and FY19
 - Commit to \$5 million per year for FY20-FY27 – An incremental \$24 Million Dollars
- **Additional Local Solar Policies and Programs:**
 - Commit to enhanced incentives and/or programs for affordable housing projects by FY 2018.
 - Study and possibly pilot a utility managed rooftop solar program that requires no investment from customer participants.



Recommendations Continued

Energy Efficiency (EE) & Demand Response (DR):

- Maintain existing goal of achieving at least 800 MW of EE & DR by 2020.
- Commit to 1,000 MW by 2027, subject to any methodology changes of the measurement and verification (M&V) consultant recommendations.
 - The 2027 goal will be reevaluated by Austin Energy upon completion of the study.
 - Austin Energy will assess the potential to reach 1100 MW by 2027.
- Austin Energy will:
 - Budget at least 2.5% gross revenues to Demand Side Management
 - Austin Energy will work with stakeholders to make future goals 'budget based' rather than MW based as has been done in the past.
 - Commit to achieving a target of at least 1% of energy savings
 - Commit to directing at least 15% of total DSM budget to existing and potential programs for low income and hard to reach markets in the multifamily and single family areas along with small businesses.



Process Recommendations

Updates:

- Conduct resource plan updates in advance of cost of service studies every five years,
 - unless significant changes in technology or market conditions warrant more frequent updates.
- Rerun cost analysis for the existing plan and provide an update on progress towards reaching established goals every two years.
 - Reports will be provided to the City Council, the Electric Utility Commission and the Resource Management Commission.
- Austin Energy should plan for least-cost and least-risk acquisition of renewable resources.
 - The plan does not designate the components of the renewable portfolio.
 - Austin Energy should propose and develop the optimal renewable portfolio to meet this plan's goals and the utility's needs given existing generation assets, market conditions and the needs of the utility.
 - Austin Energy should explore both long-term and flexible short-term renewable energy contracts to provide affordable renewable solutions for Austin Energy customers.
 - Specific investment goals are for energy efficiency, demand response, local solar and energy storage



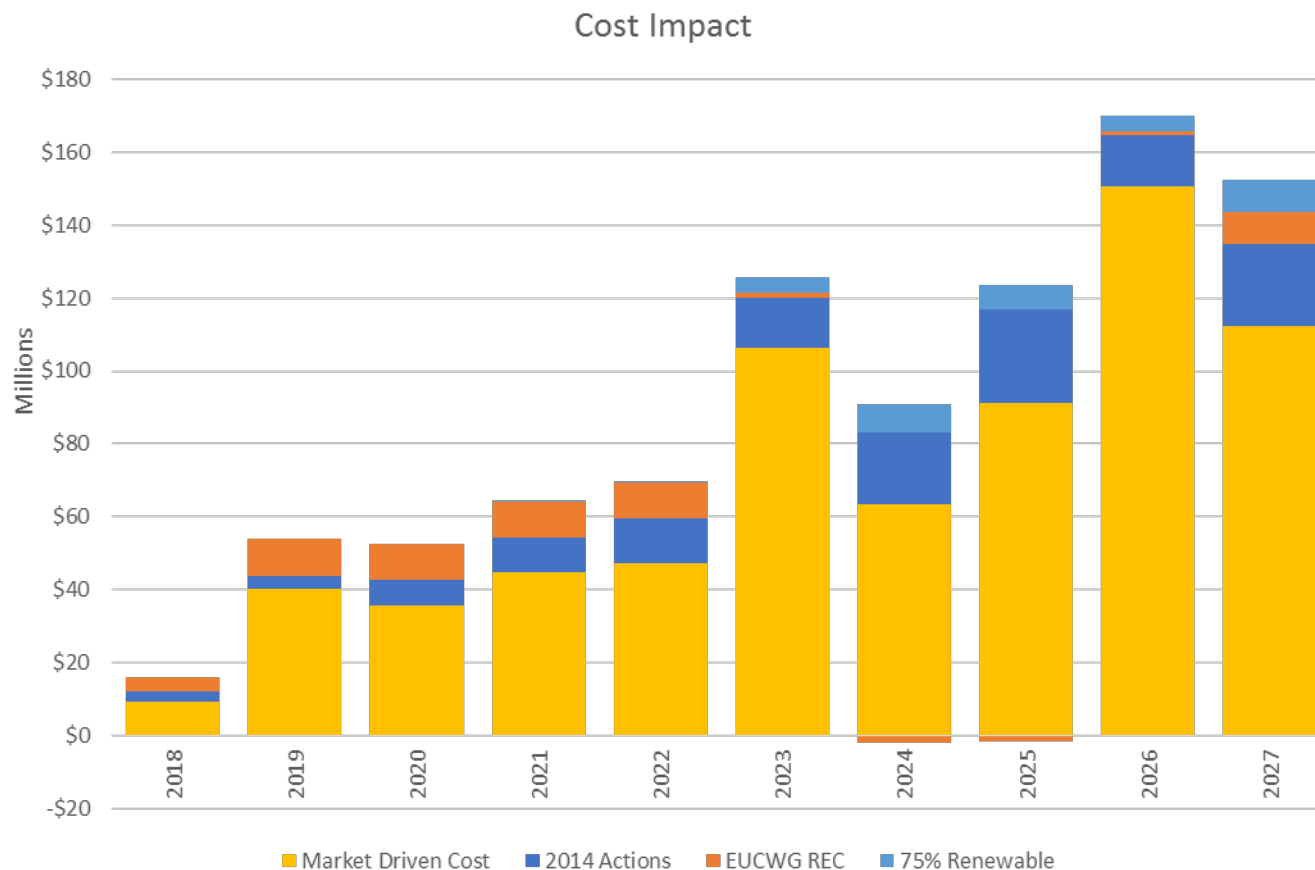
How much more would it cost to move our current goal of 55% renewable to 65%? to 75%?

- In order to achieve the 65% renewable goal, including other working group recommendations, from where we are today it would cost approximately \$278M NPV over a 20 year period or a nominal amount of over \$500M
 - Increase to 75% is estimated as an additional \$63 million over 20 years (\$37 million NPV)

Scenario Description	Delta (w.r.t. Current Generation Mix) NPV	2027 Renewable % of Load	Expected Rate Increase
Current Generation Mix	\$0	37%	4%
Council Goals	\$236M	55%	4% to 11%
EUC RPWG Recommendations	\$278M	65%	4% to 13.5%
EUC RPWG Recommendations & 75% renewable	\$315M	75%	4% to 15.5%



Estimates of Incremental Yearly Cost Impacts





What is the rationale behind not increasing our local solar goals?

- The plan looks to move away from MW goals to budget goals, this increases certainty for the customers and installers and reduces risk for the budget
- Over the next 10 years, AE will spend an additional \$24 Million more than was budgeted in the 2014 plan
- 2007 Climate Protection Plan set an overall goal of 200 MWs of solar capacity by 2020
 - Since 2004, 47 MWs of customer-sited solar has been installed
 - 6,200+ customer locations
 - \$67 million in cumulative incentives – approximately \$10,800/solar customer
 - 30 MWs of local solar is installed at Webberville site
 - 2.5 MWs is under development as a Community Offering



What are other peer cities goals with regard to renewable energy?

- We are not aware of any major cities that have a goal to source 100% of their power from renewable energy. Some cities in California have made declarations to achieve 100% renewable energy within the 2035 timeframe mostly through financial methods such as community choice aggregation or offsets. Austin is unique in that it has a retail franchise but also owns generation and it owns its electric utility that can then source renewable projects through Power Purchase Agreements.

- State of New York (NYC)
 - 50% Renewable by 2030

Municipality	Population	Goal	Goal Year
Austin	931,820	55%	2025
San Antonio	1,469,845	1500 MWs of Capacity (~20%)	2020
Denton	131,044	70%	2019
Georgetown	63,716	100%	2017

- Texas
 - Houston – 50% municipal buildings
 - Dallas – 100% municipal buildings
 - El Paso - 20% of City and 10% of community by 2020
- Chicago
 - 100% Renewable for public buildings by 2025
- State of California (Los Angeles, San Diego, San Francisco, San Jose)
 - 50% renewable by 2026, 60% by 2030, 100% by 2045



Cities that are 100% Renewable and how they achieved it

- Aspen, Colorado (achieved in 2015), Pop. 6,658
 - 50% Wind, 45% Hydro, 5% Solar
- Burlington, Vermont (achieved in 2014), Pop. 42,282
 - 30% Biomass from wood chips, 20% from Landfill methane, wind and solar, 50% Hydro
- Georgetown, Texas (goal to achieve in 2017), Pop. 63,716
 - 150 MW Solar Farm PPA (SunEdison), 144 MW Wind Farm PPA (EDF)
 - Will rely on power from the grid in periods of low production
 - True cost is yet to be realized as net cost may vary from contracted cost
- Greensburg, Kansas (achieved in 2013), Population 785
 - 12.5 MW Wind Farm located outside of town, excess MWHs are sold back as Renewable Energy Credits
- Other Cities have made 100% renewable commitments but have not yet achieved them, (current average residential rate is 15.34 - 16.35 c/kWh)
 - San Jose, California (by 2022)
 - San Diego, California (by 2035)
 - San Francisco, California (by 2030)



Summary

- Austin Energy supports the recommendations of the EUC Working Group which will continue AE's leadership as a utility supplying clean energy
- The actions of the 2014 Plan have not been achieved and require AE to manage large projects with substantial risks associated
- The risks discussed in this presentation increase with increased goals
- The 2014 Plan and the EUC Working Group recommendations may need rate support during the second half of the ten year plan
- With the EUC Working Group recommendations, AE will remain the leading utility supplying renewable energy, energy efficiency, distributed resources and smart grid technology