

**Report from the
Resource Management Commission
Regarding the
Austin Generation Resource Planning Task Force**

To: Austin City Council

Fr: Resource Management Commission

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The Resource Management Commission believes that three generation scenarios best represent the broad (and sometimes opposing) spectrum of options that could be adopted by the Commissions and City Council. We feel that by reviewing these scenarios, the Council Members will have satisfied their duty to listen to the concerns of all of Austin Energy's customer classes and stakeholders.

The "Strawman" Scenario described on Exhibit "A"

The Replace Fayette Power Plant Scenario described on Exhibit "B"

The Austin Energy Staff Recommendation Scenario described on Exhibit "C"

A chart describing some key characteristics of each of these scenarios is attached as Exhibit "D".

Each of the three scenarios are realistic and feasible, albeit at different costs and with different risks. The three scenarios advance different policy goals and are subject to different risks, which are summarized below.

It is important to remember that none of these scenarios call for a binding commitment to any future source of generation other than what has already been approved and voted on by City Council. All of the planned commitments are just that: plans. No new commitment or purchase of additional generation capacity will be final until voted on and approved by City Council at the appropriate time in the future. Accordingly, like any good business plan, all of the scenarios anticipate adjustments and revisions as more data is available and when final decisions are to be made.

The "Strawman" Scenario

General Description. This Scenario calls for adding 1,135 megawatts of new capacity to Austin Energy's existing roughly 2,900 megawatts generation portfolio (including the addition of the solar and biomass plants recently approved by City Council) between 2010 and year-end 2020. This scenario does not retire or replace any existing generation facilities (other than wind contracts terminating at the expiration of their term). Of the 1,135 additional megawatts of capacity, 300 would be natural gas, 585 would be wind, 100 would be solar and 150 would be biomass. This

scenario anticipates reduction in demand through demand-side management of 700 megawatts by 2020.

Projected Generation Costs. Under this scenario, the PACE consultants have estimated that the total generation costs of Austin Energy would increase by 29% in 2007 real dollars by 2020.

Risk – Benefit Analysis. This Scenario was the first scenario developed by Austin Energy in early 2009 for use in town hall meetings to provide a benchmark for discussing Austin Energy's future generation plan. This scenario meets all City Council goals with the lowest projected capital costs of the three scenarios (\$1.8 billion, versus \$2.4 billion for Staff Recommendation and \$3.9 billion for Replace FPP)¹.

Since this scenario calls for the highest reliance on coal and natural gas among the three scenarios, it would produce the highest level of carbon emissions.

While this scenario reduces actual CO₂ emissions of Austin Energy by 6% of 2005 levels by 2020, that reduction does not in itself meet the current reduction proposed by the Senate version of the Waxman-Markey climate change bill of 20%. Furthermore, the Strawman Scenario's reductions in carbon emissions occur predominantly towards the end of the planning period. Under this scenario, Austin Energy's greenhouse gas emissions would not be lower than 2005 emissions until 2015. Correspondingly, in this scenario investments in solar and wind occur predominantly towards the end of the planning period. The benefit to this approach is that it allows more time for the costs of solar and wind to decrease. Therefore, if the costs of those resources decline more than expected then the actual cost of this scenario may be lower. If costs do not decline as much as expected, Austin's leaders may then elect to find less expensive ways to meet the city's carbon emissions goals. The disadvantage to this approach is that Austin Energy's emissions of

¹ Some members of the Generation Resource Planning Task Force considered the "Task Force Scenario #2" as a way to reduce capital expenditures. The Task Force Scenario #2 is very similar to the Staff Recommendation with the following differences: 200 MW of additional demand-side management (DSM) savings, 50 MW less biomass, 180 MW less wind, and an additional 96 MW of solar. This scenario assumes that the private sector (not Austin Energy) will pay the bulk of the costs associated with 266 MW of new distributed solar PV beyond Austin Energy's planned and Council-approved 30 MW centralized solar PV solar facility. The capital costs of this scenario are relatively lower than other scenarios, because the scenario assumes that AE customers will directly pay for the bulk of the capital costs of additional solar PV. The capital costs of this scenario also do not reflect the additional costs associated with the increased DSM expenditures. Based on those assumptions, the Task Force #2 scenario has an estimated total capital cost of \$1.72 billion, compared with \$2.42 billion for AE's Staff Recommendation scenario. However, if the cost of solar generation were calculated the same way it was estimated for the Strawman scenario in preparing the estimates of the total capital costs of the Staff Recommendation scenario and if the increased costs associated with additional DSM measures were added to Task Force Scenario #2's capital costs, then the estimated capital costs associated with Task Force #2 would be equal to \$2.77 billion, which is about \$300 million higher than the capital costs of the Staff Recommendation and almost one billion dollars more expensive than the Strawman.

greenhouse gases are not significantly reduced until 2020 and this leaves much of the hard decisions on how to reduce actual emissions to tomorrow's leaders.

The Replace Fayette Power Plant Scenario

General Description. This Scenario calls for adding 1,945 megawatts of new capacity to Austin Energy's existing roughly 2,900 megawatt generation portfolio (including the addition of the solar and biomass plants recently approved by City Council) between 2010 and year-end 2020. This scenario retires Austin Energy's use of 607 megawatts of coal generation by 2020. Out of the 1,945 additional megawatts of capacity, 100 would be natural gas, 1,350 would be wind, 180 would be solar, 15 would be landfill gas, 50 would be geothermal and 250 would be biomass. This scenario anticipates reduction in demand through demand-side management projects of 800 megawatts by 2020.

Projected Generation Costs. Under this scenario, the PACE consultants estimated that the total generation costs of Austin Energy would increase by 31% in 2007 real dollars by 2020. This increase in generation costs is surprisingly similar to the projected increase in the other scenarios despite this scenario's significantly higher capital costs. That result is due to the estimated savings in fuel costs and avoided carbon emissions costs.

Risk – Benefit Analysis. This scenario would eliminate Austin Energy's reliance on its ownership of the Fayette Power Project coal plant by 2020. The Fayette coal plant is currently responsible for about 71% of Austin Energy's total annual emissions of carbon dioxide while generating 32% of the total energy consumed by Austin Energy's customers. Under this scenario, there would be no more emissions of greenhouse gases from the coal plant attributable to Austin Energy.

This scenario expressly does not address what should be done with the coal plant after 2020 or whether Austin Energy has the right to shutter or sell the coal plant, in light of its obligations to the co-owner, LCRA, or the rules of ERCOT and the Texas PUC.

While this scenario has the highest capital costs, it eliminates the obligation to pay for coal fuel costs and eliminates any cost risks associated with future regulatory compliance obligations, such as limits on mercury or new requirements imposed if Austin becomes non-compliant with federal clean air standards. For example, the committed costs to install SO₂ scrubbers on the coal plant are projected to cost about \$230 million. Future costs associated with the coal plant will likely include cap and trade (or similar) costs associated with greenhouse gases, limits on emissions of mercury and costs associated with Austin being in non-attainment of federal clean air guidelines. If this scenario were implemented, annual savings from reduced fuel costs could equal about \$75 million (as compared to the Strawman) by 2020 and many future costs relating to compliance with carbon emissions regulations would be avoided. If City Council believes that the costs of coal or future costs of complying with global warming legislation or other regulations governing the burning

of coal justify the additional capital expenses associated with this plan, then this scenario should be selected.

This plan would bring the highest reductions in emissions of greenhouse gases. By 2020, Austin Energy's emissions of greenhouse gases would be reduced to 62% of 2005 levels, far exceeding a potential federal mandate of a 20% reduction.

This scenario calls for the highest reliance on wind and solar energy, which are "variable" sources of energy. This scenario provides the least amount of "baseload" power, which comes from power generation technologies employing sources of energy that can be dispatched at any time. By relying more on variable sources of energy, this scenario may require increased reliance on natural gas, which can be quickly dispatched to counterbalance shortfalls caused by the variability of wind or solar. However, natural gas prices have experienced very high volatility in recent years, ranging from a low of \$3/mcf to a high of \$14/mcf in a span of a few years. Therefore, this plan may leave Austin Energy more exposed to risks associated with the volatility of natural gas prices. This additional exposure to natural gas fuel costs could eliminate some or all of the fuel savings described above.

This scenario results in the highest percentage of Austin Energy's generation portfolio being supplied by renewable energy, with 54% of the total portfolio being renewable energy by 2020.

This scenario calls for Austin Energy to stop using a current asset that produces 607 megawatts of reliable and predictable power, the Fayette Power Project coal plant. The coal plant currently provides approximately one-third of Austin Energy's total annual energy needs. The coal plant provides baseload power that is currently relatively cheap. There is a risk associated with this scenario that the substantial additions of wind capacity anticipated may not be available within 10 years in order to replace the coal plant's baseload capacity and, even if they are, significant congestion costs, transmission costs and other costs may be associated with such investments. The ability of Austin Energy to secure the anticipated amount of biomass is also in question. This scenario also calls for 50 megawatts of geothermal, although it is not clear that such energy would be available by 2020 at reasonable costs. If the coal plant is eliminated or sold, Austin Energy may not be able to recoup the millions of dollars it has recently invested in upgrades to the plant to meet regulatory requirements.

The Staff Recommendation

General Description. This scenario calls for adding 1,415 megawatts of new capacity to Austin Energy's existing roughly 2,900 megawatt generation portfolio (including the addition of the solar and biomass plants recently approved by City Council) between 2010 and year-end 2020. This scenario does not retire or replace any existing generation facilities (other than wind contracts terminating at the expiration of their term). Out of the 1,415 additional megawatts of capacity, 200 would be natural gas, 765 would be wind, 200 would be solar and 150 would be biomass. This

scenario anticipates reduction in demand through demand-side management projects of 800 megawatts by 2020.

Projected Generation Costs. Under this scenario, the PACE consultants have estimated that the total generation costs of Austin Energy would increase by 28% in 2007 real dollars by 2020. However, PACE estimates that if the unneeded coal generation capacity and natural gas capacity were sold into the open market, the increase in generation costs would be equal to 15% by 2020 – barely over a one percent increase per year.

This scenario calls for \$600 million more in capital costs than the Strawman scenario. However, by 2020, this scenario would result in annual fuel savings of \$50 million compared to the Strawman scenario. Therefore, increased reliance on wind and solar, which have no fuel costs, would result in cumulative fuel cost savings of approximately \$200 million by 2020. When the savings from fuel are credited against the higher capital costs, the difference between the two plans is \$400 million over ten years. For that additional \$400 million investment, Austin Energy would receive 100 MW more of demand-side management; 150 MW more of wind power; and 100 MW more of solar power.

Under this scenario, Austin Energy would also retain the ability to sell about 25% of the Fayette coal plant's potential energy output into the open market and thereby recoup some of the higher costs associated with this scenario, in the event such sales are economically and politically feasible.

Risk – Benefit Analysis. This scenario calls for increasing the renewable energy portfolio from 30% to 35% by 2020. Additional renewable energy would not eliminate Austin Energy's reliance on its coal plant by 2020, but would allow Austin Energy to reduce energy generation from the coal plant to a capacity factor of 60%². That reduction in coal generated electricity would help contribute to an overall reduction in Austin Energy's emissions of carbon dioxide in this scenario to 18-20% below 2005 levels by 2020 – nearly meeting potential federal requirements without the need to purchase carbon offsets. Moreover, those real reductions in emissions would be achieved earlier than under the Strawman scenario.

This scenario provides the most diverse portfolio and therefore greater hedging against risks of volatility in any one type of fuel costs, whether natural gas prices, carbon costs or the costs of renewable energy.

² Capacity factor is the kWh of energy a facility generates in a year divided by the total amount it could generate if it ran at maximum output.

Final Recommendation

If City Council believes that, once the current goals established by the Austin Climate Protection Plan are met, the next most important policy objective is to minimize the cost associated with constructing new generation facilities, then the Strawman scenario best suits that policy objective.

If City Council believes that the risks associated with continuing to rely on coal, whether due to the costs of coal, the costs associated with regulation of carbon emissions or the health and safety risks, are too high, then the Replace FPP scenario should be adopted.

However, for the reasons explained above, the authors of this report support the Austin Energy Staff's Recommended generation scenario. That recommendation strikes a middle ground between the other two generation scenarios. The staff recommendation most effectively protects Austin Energy customers from the double risk of price increases associated with carbon emissions and price increases associated with natural gas volatility. The Staff Recommendation provides a steady path to eliminating Austin's reliance on coal and avoiding future costs associated with coal, while also protecting against too rapid a pace of capital expenditures. The Staff Recommendation also avoids assumptions about the private sector's willingness to bear the capital costs of new distributed generation. We believe that Austin can adopt this generation plan and continue to be a leader in carbon reduction.

The future cost of energy will significantly impact the quality of life for Austin's families and the local economy. We believe that the City Council should assess the plans based on all costs, including estimated future capital costs, the costs associated with fuel costs, costs associated with carbon emissions, other regulatory costs and transmission costs as well as anticipated increases in inflation and staff and administrative costs. The staff recommendation best protects against the risk of price increases from all of these factors and spreads the risk of future price increases across the broadest array of generation resources.

Therefore, the Resource Management Commission supports the staff recommended scenario, as amended by the task force recommendations attached as Exhibit "E", with the proviso that Austin Energy review the plan in two years with the target of accelerating the phase down of Fayette plant and toward its eventual closure by 2020 if economically and technologically feasible.