Sustainable Buildings, Electric Supply and Water Use
Recommendations for Environmental Investment Plan

Additional investments in energy efficiency, demand response, local solar, batteries and coal retirement are needed to meet the carbon-free by 2035 goal in the Austin Energy Resource Generation and Climate Protection Plan and the greenhouse gas emissions reduction goals in the Austin Climate Equity Plan. These are the resources that are locally available and cost effective for decarbonizing the energy sector. Decarbonizing the energy sector is doubly important because it is the lynchpin for decarbonizing transportation, buildings and other activities. Decarbonizing city buildings and improving water conservation will also yield greenhouse gas (GHG) reductions and other co-benefits.

1. **Expand Austin Energy's energy efficiency programs**
    a. **Details:** More investment is needed to improve building envelopes and air sealing and install efficient heat pumps for heating and cooling and hot water production, as well as LED lighting and other energy efficiency appliances. Additional community outreach is needed to inform the community about available local, state and federal incentives. Building performance should be measured and ranked to enable focused attention on buildings with the highest need.
    b. **Benefits:** GHG reduction, air pollution reduction (and health benefits), affordability/bills reduction (for program participants and non-participants), improved health and safety of buildings and their occupants, increased building life (reduced embedded GHG emissions), greater equity in energy bills and home comfort, improved grid resilience
    c. **Cost:** AE budget is $13.6 million/year for existing programs. This amount should be doubled to $27.2 million/year ($13.6 million/year increase). An additional 14-20 FTEs should be allocated to run energy efficiency programs, costing $1.68-2.4 million/year. These costs will be offset by reduced AE energy purchases, ancillary services purchases, and transmission costs.
2. **Expand Austin Energy's demand response programs**
    a. **Details:** Expanded price-based demand response programs, including to the residential, commercial, industrial, and transportation sectors is needed. "Demand response ready" should be well defined and enforced. Demand response should be automated as much as possible. Electric hot water tank programs, thermostats, home energy managements systems, commercial and residential battery storage, electric vehicle smart chargers, smart meters
    b. **Benefits:** GHG reduction, affordability/reduced bills (reduce peak demand costs for AE), improve grid resilience
    c. **Cost:** AE budget is $3.6 million/year for existing programs. This amount should be quadrupled to $14.4 million/year ($10.8/year increase). An additional 11-16 FTEs should be allocated to run demand response programs, costing $1.32-1.92

million/year. These costs will be offset by reduced AE energy purchases when ERCOT prices are high.

3. **Invest in battery energy storage**
    a. **Details:** Battery storage is an important part of a decarbonized grid. Austin Energy must invest in utility scale and distributed battery storage to flatten the demand curve and avoid local electric grid price spikes that increase bills. Decentralized batteries on resilience hub buildings, school and supportive housing can be used as a virtual power plant (VPP) to help with load shifting during normal use and provide critical resiliency backup energy during outage events. Longer term heat batteries can decarbonize industrial facilities throughout Austin by soaking up excess solar and wind during curtailment and putting energy into those industrial uses, or even storing it to later export to the grid, which allows much higher penetration of renewables.
    b. **Benefits:** GHG reduction, air pollution reduction (and health benefits), affordability/bills reduction (for program participants and non-participants), improved grid resilience
    c. **Cost:** For utility scale batteries: Using the average cost of 4-hr duration batteries provided by AE ($1,168/kW), 200 MW would cost $233.7 million. Using the average cost of 8-hr duration batteries provided by AE ($1,992/kW), 400 MW would cost $797 million. Using the average cost of 100-hr duration batteries provided by AE ($2,150/kW), 100 MW would cost $215 million. The combined 700 MW battery investment would cost $1,245.7 million. These costs would be recovered by earnings in the ERCOT energy and ancillary services markets. Heat battery pilots could be funded as public/private partnership with local industrial facilities and piggyback on federal funding currently flowing to these companies.

4. Utility-owned or contracted rooftop solar
    a. **Details:** Austin Energy needs a considerable expansion of local solar to meet energy needs and keep bills affordable (by avoiding price separation from remote resources). Land is expensive, so rooftop solar is the best locally available clean renewable energy source. New programs are needed to allow the utility to invest directly in this local rooftop solar (different from current programs that require customer investment). Under this structure, AE would pay for installation of residential rooftop solar. The utility or a third part would own the installations for the first 15 years (est.) and the customer would pay a tariff that is less than the Value of Solar credits they earn on their bill. After 15 years, ownership would flip to the customer.
    b. **Benefits:** GHG reduction, air pollution reduction (and health benefits), affordability/bills reduction (for program participants and non-participants), more equitable access to solar, reduced land use for energy production
    c. **Cost:** Assuming $3/watt current solar cost and $2.70/watt solar cost starting in 2024 and getting the solar ITC and domestic content incentives and recovering cost over 15 years via tariff, $74.46 million could establish a revolving fund that could support 5 MW installation per year. $223.38 million could establish a

revolving fund that could support 15 MW installation per year. The 5 MW program would also need approximately 3 FTEs, costing approximately $360,000/year, and the 15 MW program would need 6 FTEs, costing approximately $720,000/year. These costs will be offset by reduced AE energy purchases, ancillary services purchases, and transmission costs.

5. **Shut down/retire AE's portion of Fayette coal plant**
    a. **Details:** Austin Energy and LCRA co-own two coal-burning units at Fayette. Austin Energy's portion accounts for about 25% of the entire Austin Energy's scope 1 and 2 emissions (current GHG inventory). It is impossible to reach near, medium or long-term GHG reduction goals without closing Austin Energy's portion of Fayette. LCRA has demanded payment from Austin Energy for changing the contract so AE fully owns one unit and can shut it down. We don't know the exact amount, but it was rumored to be in the 100's of millions.
    b. **Benefits:** GHG reduction, air pollution reduction (and health benefits), water pollution reduction (and health benefits and liability), long-term affordability improvement
    c. **Cost:** $100-300 million Because of the large amount of GHG emissions from Fayette, this cost is still much less than the social cost of carbon (contribution to climate change).
6. **Air sealing task force and training program**
    a. **Details:** According to RMI and DOE air sealing is the lowest cost path to lowering operational carbon. Air sealing is a sequencing and trade knowledge problem, not a technical or product problem, so training up our trade base is the best way to ensure higher quality, more air sealed buildings. Under this new program, Austin Energy would publish air sealing results of all new buildings and retrofits and host trainings for trades on how to execute tight building envelopes. Research grants and federal funds for trainings and air sealing knowledge and skills
    b. **Benefits:** GHG reduction, air pollution reduction (and health benefits), affordability/bills reduction (for program participants and non-participants), improved indoor air quality, improved grid resilience
    c. **Cost:** $2 million There is a lot of federal money for this type of training.
7. **Passive House Incentive Program**
    a. **Details:** As directed by City Council on April, 18, 2024, create a program that offers cash incentives to affordable housing projects in Austin that certify as Passive House buildings. Use the Massachusetts Passive House Challenge Program as a model for this program. This program will reduce energy use costs for affordable housing providers while also creating a market shift - helping local design and construction teams learn how to build much more energy efficient buildings. As these projects are completed the added cost comes down through a learning curve that has been seen in other markets using this strategy, eventually allowing for smaller incentives and code mandates of more efficient buildings. Passive House buildings can play a critical role in the energy transition

as well due to their low load and ability to load shift to help with peak demand curve reduction and resilience.

b. **Benefits:** GHG reduction,
c. **Cost:** $8 Million would fund 2,000 units of housing at $4,000/unit. This also piggybacks on IRA funding as any project doing this would also be eligible for $5k/unit of 45L tax credits.

8. **Decarbonizing municipal buildings**
    a. **Details:** Retrofitting existing municipal buildings to reduce energy use, decarbonize them and make them more resilient will benefit the City budget and the services offered to the community. In addition to energy efficiency upgrades to meet suggested 2030 EUI reduction, all buildings should have solar installed (where appropriate), be equipped to participate in demand response programs, utilize 100% electric appliances, include rainwater harvesting and utilization for landscaping irrigation, which should be minimal, and should utilize sustainable and low-embodied carbon materials. Energy modeling and life cycle assessments should be done for all retrofits and new construction for municipal buildings .
    b. **Benefits:** GHG reduction, long-term benefit for city budget; more resilient community; serve as a reference for sustainable buildings in the commercial sector - laying the ground to replicate high-performance, low embodied carbon, all-electric buildings in the commercial sector
    c. **Cost:** For 10 buildings: $45 million
9. **Water leak detection programs**
    a. **Details:** In 2023, Austin Water loss 8,678,000,000 gallons of water which equates to a 21.68 gallons per capita per day of water loss. While this loss is within the acceptable loss for water utilities as set by the American Water Works Association (AWWA), there is a lot of room to make significant improvements.
    b. **Benefits:** water conservation; GHG reduction (Reducing water loss in the water will preserve this water for productive use and will reduce energy use for pumping and treatment.)
    c. **Cost:** Austin Water should, at a minimum, triple its current leak detection budget. (need to fill in amount)
10. **Improve rebates for residential and commercial landscape conversions**
    a. **Details:** During summer months, the use of water dramatically increases, mainly due to the watering of landscapes. Turf areas in particular require the most water per square foot in any landscape. While ordinances for new construction can help reduce the amount of turf areas, existing properties don't have requirements to adapt their landscapes to conserve water. Reducing the amount of turf grass that requires a lot of water to survive will help conserve water. Austin Water should offer more substantial and accessible rebates for landscape conversions. Currently, Austin Water offers a landscape conversion rebate of $100 per 100 square feet, up to a maximum rebate of $3000. Most conversions will be smaller areas and thus, the currently offered rebate amounts don't incentivize many customers to implement landscape conversions. In 2023, only

19 rebate applications were submitted to Austin Water. Austin Water should implement a tiered rebate structure that offers more rebate money for smaller areas of landscape conversion and should substantially increase the maximum rebate offered. As suggested by the Get Fertilizer Wiser campaign, there should also be incentives that are more easily accessible to individuals who may not need to fully remove turf grass in order to reduce or eliminate watering.

b. **Benefits:** water conservation; GHG reduction (Reducing water use for landscaping irrigation will preserve this water for productive use and will reduce energy use for pumping and treatment.)
c. **Cost:** (need to fill in amount)