Late Backup

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The attached report titled ***"The Impacts of Increasing Natural Gas Fueled Combined Heat and Power from 20 to 35 Percent of Total Electricity Consumption in Texas"*** explores the benefits of increasing the use of natural gas fueled CHP across the state. This report was prepared by the U.S. Department of Energy's (DOE) Gulf Coast Clean Energy Application Center (GCCEAC). The GCCEAC is one of eight application centers established in the United States and its role is to provide education to industry and policy leaders about developing and deploying energy-efficient technologies.

CHP is not a single technology but a suite a of technologies that can use a variety of fuels to generate electricity or power at the point of use allowing the heat that would normally be lost in the power generation process to be recovered to provide needed heating and cooling. The result is much greater improvement in overall fuel efficiency thereby lowering fuel costs and CO^2 emissions.

This DOE report clearly shows that CHP using Texas natural gas is the path to adding energy reliability while improving air quality and dramatically reducing water used for power production. The report finds that increasing CHP from 20 to 35% of total electricity consumption in Texas would:

- Lower carbon dioxide emissions by 81 million tons per year - the equivalent of removing more than thirteen million cars off Texas' roads.
- Lower sulfur dioxide emissions by about 384 thousand tons per year - an amount equivalent to retiring twenty-one 500 MW coal plants.
- Lower nitrogen oxide emissions by about 137 thousand tons per year - an amount equivalent to retiring twenty-two 500 MW coal plants.
- Lower annual water consumption by about 25 billion gallons per year - an amount equivalent to the water used by ten 500 MW coal plants each year.

Texas holds enormous potential for increased CHP technology. This report supports the Texas Combined Heat & Power Initiative (TXCHPI) position that the time has come to accelerate the use of CHP for the betterment of Texas.

US DOE White Paper Conclusions (Background to CHP talking points)

Combined heat and power (CHP) facilities currently generate 20 percent of the electricity in Texas. The systems are located near host facilities to which they supply heat and electricity. On average, the technology was found to be twice as efficient as coal-fired power plants, and about 25 percent more efficient than the natural gas-fired generator fleet (non-CHP).

The paper examined the implications and impacts of expanding the use of CHP in the state from 20 percent to 35 percent of electrical energy by 2025. To achieve the higher output, the amount of installed CHP capacity would need to increase from 17,000 MW to 31,000 MW, an increase of about 14,000 MW. To the extent that electricity generation from CHP displaced coal-fired generators, the following environmental benefits were found.

Environmental

- **Carbon Dioxide –** At full build out of the DOE plan in 2025, annual carbon dioxide emissions would be reduced by 48 million tons per year, equivalent to the annual CO_2 emissions of about eight million cars; and cumulative reductions in CO_2 emissions totaling 297 million tons.
- **Nitrogen Oxide Emissions** – Annual nitrogen oxide emissions would be reduced by 137 thousand tons, which is the equivalent emissions reduction that would be achieved by retiring about twenty-two 500 MW coal plants; cumulative reduction in NOx emissions totaled 854 thousand tons
- **Sulfur Oxide Emissions –** Annual sulfur oxide emissions would be reduced by 384 thousand tons, which is the equivalent emissions reduction that would be achieved by retiring about twenty-one 500 MW coal plants; cumulative reduction in SOx emissions totaled 2,394 thousand tons
- **Water Consumption** – Annual water consumption would be reduced by 25 billion gallons per year; cumulative water savings between 2012 and 2025 totaled 161 billion gallons

Societal

- **Energy Security –** On-site energy can operate independent of the electric distribution system
  - Reduced System Vulnerability – Protection from power surges during storms and voltage fluctuation
  - Disaster Mitigation – Ability to 'island' from utility grid during disaster situation to keep the lights on (and HVAC)
  - Disaster Recovery – Ability to restore operations sooner than the
- **Energy Reliability**
  - Improved power quality
  - Business continuity
  - Reduced grid congestion
  - End-of-the-wire supply
  - Short lead-time, off-the-shelf, modular technology
- **Energy Efficiency**
  - Improved fuel efficiency (fuel economy)
  - Optimized use of scarce natural gas resources
  - Eliminates line losses
- **Reduced electric rates**
  - Lower cost for new electricity than new central generation and T&D
  - Improved energy cost predictability
  - Low ratepayer investment required (generation or T&D)

Austin City Council **Item ID** 10206 **Agenda Number** 59.
Meeting Date: 10/6/2011 **Department:** Items From Council
Sponsor Council Member William Spelman
Co-Sponsor Mayor Pro Tem Sheryl Cole

59. Approve a resolution directing the City Manager and the General Manager of Austin Energy to prepare a report that analyzes various strategies for near-term resource, generation and climate protection goals as they relate to Fayette Power Plant and other resources.

Mayor, Council. My name is Rich Herweck, president of a nonprofit organization representing 30 of the top industry leaders in the clean energy space in Texas. You will recognize several of the logos on the handout. I appreciate the opportunity to come before you, first to educate about a money saving, clean energy resource, and then to advocate that this Council take action to adopt this option.

The 24% reduction of FPP's 400 MW amounts to about 140 MW. So the question is "Where can the City look for similar capacity that is clean, affordable, reliable, and can be procured in an expeditious manner as defined by State law?" Now here's the education portion of my talk.

Combined heat and power (CHP, sometimes called cogeneration) is the sequential production of heat and electricity from a common fuel source. CHP is the most efficient and therefore the cleanest proven technology for economically converting natural gas or renewable fuels to electricity. And, because of IRS rules and attractive economics, can be funded with public-private investment. CHP is actually the preferred strategy for a number of utilities and large customers. You don't have to look very far to see CHP in action. Mueller at Dell Children's and the UT campus, that coincidentally, has about 140 MW of capacity the same as Council mandate for FPP. UT emissions level in 2011 is the same as it was back over 30 years ago! Imagine if Austin's Climate Protection Plan used a baseline from late 1970's? You may ask is this affordable? Well, the fact that UT self-provides its energy needs from its CHP system, rather than purchasing from outside utilities should answer that question.

Now, for the advocate part. My organization advocates that this Council call for more CHP in Austin. We are not asking for a rebate from Austin Energy to make this happen. Instead, we embrace the preferred option that Austin Energy purchase energy output from CHP systems that our members will fund, install, and operate. Our price to provide reliable power, even when the sun is not shining, is so affordable, that Austin Energy could make superior profits using existing rates, and much higher profit under the proposed rate increase. We aren't asking for the City to purchase CHP systems. We understand that the City and AE may have challenges with such a move. What we are asking is that Austin Energy and this Council adopt and support CHP as a preferred option for economically meeting conservation and clean air goals. Thank you for supporting the champions of clean and affordable power from locations inside the City territory.

Austin City Council **Item ID** 10208 **Agenda Number** 60.
Meeting Date: 10/6/2011 **Department:** Items From Council
Sponsor Council Member Chris Riley
Co-Sponsor Council Member William
Spelman **Co-Sponsor** Council Member Mike Martinez
Subject
Approve a resolution directing the City Manager and Austin Energy General Manager to report back to Council on the strategy related to reaching Council adopted demand side management and energy efficiency goals.

The goals adopted in the Austin Energy April 22, 2010 included 800 MW of energy efficiency by 2020, while reducing carbon dioxide by 20% below 2005 level. The plan also challenged Austin Energy to attain maximum energy efficiencies by investing the least amount of money.

As stated previously, I represent an industry stakeholder group who has proven experience designing, installing, operating, and funding Combined Heating and Power systems. Such systems are the preferred way to meet simultaneous demand for power and thermal or cooling energy. The EPA, DOE and ACEEE have published numerous documentation that attest to the value of this technology, and leading institutions across Texas have adopted CHP, such at UT, Texas Medical Center, T A&M and yes, even a 100,000 SF condominium. The treasurer of the Condo says that his small CHP will save over a million dollars, twice as much as what the system cost by cutting his demand by 80%, and doubling his energy efficiencies. This is for a 250 kW system, larger MW systems have dramatic results!

We recognize that Austin Energy has had CHP experiences and Council has requested a study of CHP potential as a part of the April 22, 2010 generation plan. That plan should acknowledge that CHP works well for meeting the needs of UT's 50,000 students and 20,000 employees, and CHP works well for other customers across Texas, and throughout the US. CHP can work well at hundreds of locations in Austin as well as being the preferred technology for urban growth. We would like for this Council to release to my organization the results of the CHP study, so that members of the Initiative can propose Public Private Partnerships where the City of Austin does not furnish any investment capital to make CHP happen in Austin. That's right, no capital required, but instead, we would need the City and its utility to agree to simply purchase power at competitive pricing still much cheaper than the cost of other options that have been identified during the on-going rate case. Since the CHP would be inside AE service territory, we need not worry about new power lines because they already exist.

Members of the Initiative were instrumental in passing SB 1048, a new law that spells out details in how to make a public private partnership work successfully for a City such as Austin. P3 has been determined by lawmakers as a preferred way to do business in Texas especially when governments are squeezed financially, as is the case now with Austin Energy's rate case.

Members of the Initiative are ready to act. Release of your CHP study would get us headed in the right direction in bringing investment dollars to Austin to pay for a significant contribution to your DSM and conservation goals. And no, we are not even asking for a rebate check, just simply your support and cooperation in developing these clean distributed generation devices in the Clean Energy Capital. Please include combined heat and power in the resolution.