

**FINDING OF NO SIGNIFICANT IMPACT  
AND FLOODPLAIN STATEMENT OF FINDINGS  
FOR THE  
THERMAL ENERGY CORPORATION COMBINED HEAT  
AND POWER PROJECT, HOUSTON, TEXAS**

**RESPONSIBLE AGENCY:** U.S. Department of Energy (DOE)

**ACTION:** Finding of No Significant Impact

**SUMMARY:** DOE completed the *Final Environmental Assessment for the Thermal Energy Corporation Combined Heat and Power Project, Houston, Texas* (DOE/EA-1740). Based on the analyses in the Environmental Assessment (EA), DOE determined that its proposed action - awarding a federal grant to the Thermal Energy Corporation (TECO) to facilitate installation of a combined heat and power (CHP) system at the Texas Medical Center's district power plant in Houston, Texas - would result in no significant adverse impacts. DOE further determined that the proposed project would have potential beneficial impacts to the nation's energy efficiency and local air quality. Additionally, beneficial local socioeconomic impacts could occur as a result of increased employment opportunities and spending in the project area.

**BACKGROUND:** As part of the *American Recovery and Reinvestment Act of 2009* (Recovery Act; Public Law 111-5, 123 Stat 115), DOE's National Energy Technology Laboratory (NETL), on behalf of the Office of Energy Efficiency and Renewable Energy's Industrial Technologies Program, is providing \$156 million in federal funding for competitively awarded agreements to facilitate deployment of combined heat and power systems, district energy systems, waste energy recovery systems, and energy-efficient industrial equipment and processes at single or multiple installations and sites.

The federal action of providing funding for these Industrial Technologies Program projects requires compliance with the *National Environmental Policy Act of 1969* (NEPA), as amended (NEPA; 42 U.S.C. 4321 et seq), the Council on Environmental Quality regulations (40 CFR Parts 1500 to 1508), and DOE's NEPA implementing regulations (10 CFR Part 1021). DOE prepared an EA to evaluate the potential environmental consequences of providing a grant for this proposed project under the Industrial Technologies Program.

**PURPOSE AND NEED:** The overall purpose and need for DOE action pursuant to the Industrial Technologies Program and the funding opportunity under the Recovery Act is to set up U.S. industry as the world leader in energy efficiency and productivity. The program's goal is to facilitate a 25-percent reduction in industrial energy intensity by 2017. The Industrial Technologies Program's three-part strategy intends to achieve this objective by:

- Sponsoring research, development, and demonstration of industry-specific and crosscutting technologies to reduce energy and carbon intensity;
- Conducting technology delivery activities to help plants access today's technology and management practices; and

- Promoting a culture of energy efficiency and carbon management within industry.

The strategy also calls for an 18-percent reduction in U.S. carbon intensity by 2012. DOE seeks to identify projects and suitable technologies that it can fund to meet this goal. TECO's proposed project at the Texas Medical Center would also contribute to the nation's economic recovery by creating or helping to retain manufacturing jobs in the United States in accordance with the objectives of the Recovery Act.

**DESCRIPTION OF THE PROPOSED ACTION:** DOE's proposed action is to provide a grant to partially fund TECO's proposed project - the purchase and installation of a new CHP system at the Texas Medical Center in Houston, Texas. The project would include: (1) purchase of the necessary equipment (natural gas-powered turbine, heat-recovery steam generator, compressor, chillers, cooling tower, and exhaust stack); (2) installation of the CHP system on an existing foundation outside of the Central Plant; and (3) installation of remaining equipment inside a building currently under construction at the site. Upon completion, the system would be capable of generating about 45 megawatts of electricity and producing 270,000 pounds per hour of steam. DOE would provide \$10 million in financial assistance in a cost-sharing arrangement to facilitate implementation of the project. The estimated cost of the proposed project is \$83 million.

**ALTERNATIVES CONSIDERED:** In addition to the proposed action, DOE considered the No-Action Alternative as required under NEPA. Under the No-Action Alternative, DOE would not provide funds to TECO for the proposed project. For purposes of the EA, DOE assumed that the project would not proceed without DOE funding. This assumption established a baseline against which the potential environmental impacts of the proposed project were compared.

**ENVIRONMENTAL CONSEQUENCES:** DOE evaluated the potential environmental consequences of the proposed project and the No-Action Alternative. DOE considered 14 environmental resource areas in the EA. However, not all areas were evaluated at the same level of detail. For nine of the resource areas, DOE determined there would be no impacts or the potential impacts would be small, temporary, or both, and therefore did not carry these areas forward for additional analysis. DOE focused its more detailed analyses on those resources that could require new or amended permits, have the potential for significant impacts or controversy, or interest the public, such as socioeconomics and occupational health and safety. These resource areas included air quality, noise, water resources, socioeconomics, and occupational health and safety.

The CHP system would be operated in a nonattainment area for ozone. More than 40 tons of nitrogen oxides, 200 tons of carbon monoxide, and 50 tons of particulate matter would be emitted per year during operation of the system. The Texas Commission on Environmental Quality conducted a new source review and a prevention of significant deterioration review for operation of the CHP system, and issued a revised operating permit in July 2008 that included emissions from this and other on-site projects. DOE concludes that operation of the system would conform to the State's implementation plan and would be in compliance with federal and Texas air quality regulations. The project would have a net beneficial impact on air quality in the region, as operation of the new system would allow TECO to reduce its consumption of electricity from the regional grid, and would require less natural gas to

produce steam than under current operations. Additionally, the proposed project would result in a net decrease of about 115,000 tons of carbon equivalents per year

Operation of the CHP system would cause a small increase in noise levels outdoors at medical facilities adjacent to the Central Plant, but levels indoors at these facilities would remain within acceptable levels. The project would cause a small, possibly imperceptible change in noise in nearby residential facilities, but these changes would be within regulatory limits.

Installation and operation of the CHP system would have no or negligible adverse impacts on surface water quality. Discharges of storm water and wastewater from the cooling tower would meet the effluent limitation and monitoring requirements of existing discharge permits. The municipal water system has the capacity to meet the proposed project's demand for water.

DOE also evaluated socioeconomics to determine the potential benefits of the proposed project on the surrounding communities. The project is anticipated to result in small increases in local employment and local spending, potentially providing a minor beneficial impact to the local communities.

Operation of the CHP system would not cause significant hazards to workers or the public at the Central Plant. Manufacturing of project equipment would result in a minor to moderate and temporary, beneficial impact to the economy in the areas where the equipment would be manufactured and in the Houston area during installation.

The other environmental resource areas DOE evaluated for potential impacts were geology and soils; land use; aesthetics and visual resources; noise; biological resources; historic and cultural resources; environmental justice; transportation and utilities; and energy and materials. DOE determined that there would be no adverse impacts for these resource areas, or that the impacts would be small, temporary, or both. The EA provides more detail on the reasons DOE did not conduct more detailed evaluations of these areas.

Under the No-Action Alternative, DOE assumed the project would either be delayed, as TECO sought other funding sources, or abandoned altogether. The potential environmental consequences, if the project were delayed, could be different if the project was modified. If abandoned, the potential environmental consequences would not occur. Furthermore, the potential beneficial impacts would change or would not occur.

**FLOODPLAIN STATEMENT OF FINDINGS:** The Texas Medical Center's Central Plant, where the proposed project would be implemented, is located within the 100-year floodplain of Brays Bayou. DOE conducted a floodplain assessment during preparation of the EA, and included a map of the floodplain and project site, as required by regulations for "Compliance with Floodplain and Wetland Environmental Review Requirements" (10 CFR Part 1022). The proposed project must be located at the Central Plant, and therefore within the floodplain, because the new CHP system requires use of existing facilities and equipment at the Central Plant, including the steam and chilled water delivery systems. For this and other reasons, TECO and DOE did not consider alternative locations outside of the floodplain. All equipment would be installed behind an existing floodwall, constructed in 2004, and the project would not cause an increase in storm water runoff or raise the elevation of the floodplain. Federal Emergency Management Agency flood proofing and elevation certificates have been prepared

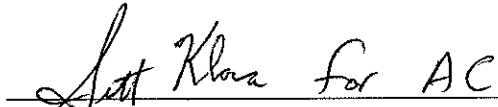
for this project to certify that the project would not alter the floodplain management elevation requirements or affect associated insurance ratings. DOE concludes that this project would have no adverse impacts on the natural and beneficial floodplain values associated with Brays Bayou, would not affect lives or property in the area, and would comply with floodplain protection regulations.

**PUBLIC AVAILABILITY:** DOE issued the Draft EA on May 22, 2010, and advertised its release in the *Houston Chronicle* on May 22, 23, and 24, 2010. In addition, DOE sent copies of the Draft EA for public review to the Harris County Library in Houston, Texas. DOE established a 15-day public comment period that began May 22, 2010 and ended June 5, 2010; and announced it would accept comments by mail, e-mail, and facsimile. Copies of the Final EA and this Finding of No Significant Impact are available at DOE's National Energy Technology Laboratory web site at [www.netl.doe.gov/publications/others/nepa/ea.html](http://www.netl.doe.gov/publications/others/nepa/ea.html).

The Draft EA was distributed to various federal, state, and local agencies with jurisdiction or special expertise. DOE conducted consultations by mail with the responsible U.S. Fish and Wildlife Service (USFWS) field office and the Texas State Historic Preservation Office (SHPO). The USFWS provided guidance on the consultation process but no specific comments on the project. The SHPO concurred with DOE's determination that no historic properties would be affected. The Federal Emergency Management Agency requested that we contact the county floodplain administrator. DOE sent a copy of the Draft EA and notice of floodplain involvement to the Harris County Flood Control District; no comments were received. Comments were received from Region 6 of the U.S. Environmental Protection Agency (EPA) requesting information about the design of the foundation upon which equipment would be installed, and clarification of impacts to floodplains, noise levels, and water quality. The EA was revised to more adequately address these topics.

**DETERMINATION:** On the basis of the evaluations in the Final EA, DOE determined that its proposed action, to provide a \$10 million Recovery Act financial assistance grant, and IECO's proposed project, installation and operation of a CHP system and associated equipment, would have no significant impact on the human environment. Although the proposed project would require amendments to existing air permits, the new CHP system would comply with and operate within all amended permit requirements. Furthermore, although this project would be completed within the Brays Bayou 100-year floodplain, no changes to the floodplain elevation or impacts to local landowners would result from its implementation. All other environmental impacts DOE identified and analyzed in the EA would be small, temporary or both. Therefore, preparation of an environmental impact statement is not required, and DOE is issuing this Finding of No Significant Impact.

Issued in Pittsburgh, PA, this 23 day of July 2010.

  
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