

THE UNIVERSITY OF TEXAS AT AUSTIN

The Carl J. Eckhardt Heating and Power Plant

District Energy Climate Summit 2009
District Energy Climate Award



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Agenda

- **Background on the CHP System**
- **The Performance of the System Compared to the Grid**
 - **Greenhouse Gas Emissions & Efficiency**
- **The Campus Benefits Realized by our System**



Background

- Total Campus Budget of \$2.076 billion
- Contracts and Grants of \$511 million
 - Federal Contracts and Grants of \$281 million
- 19.1 million square feet
- Student enrollment of 50,000
- Staff of 20,000



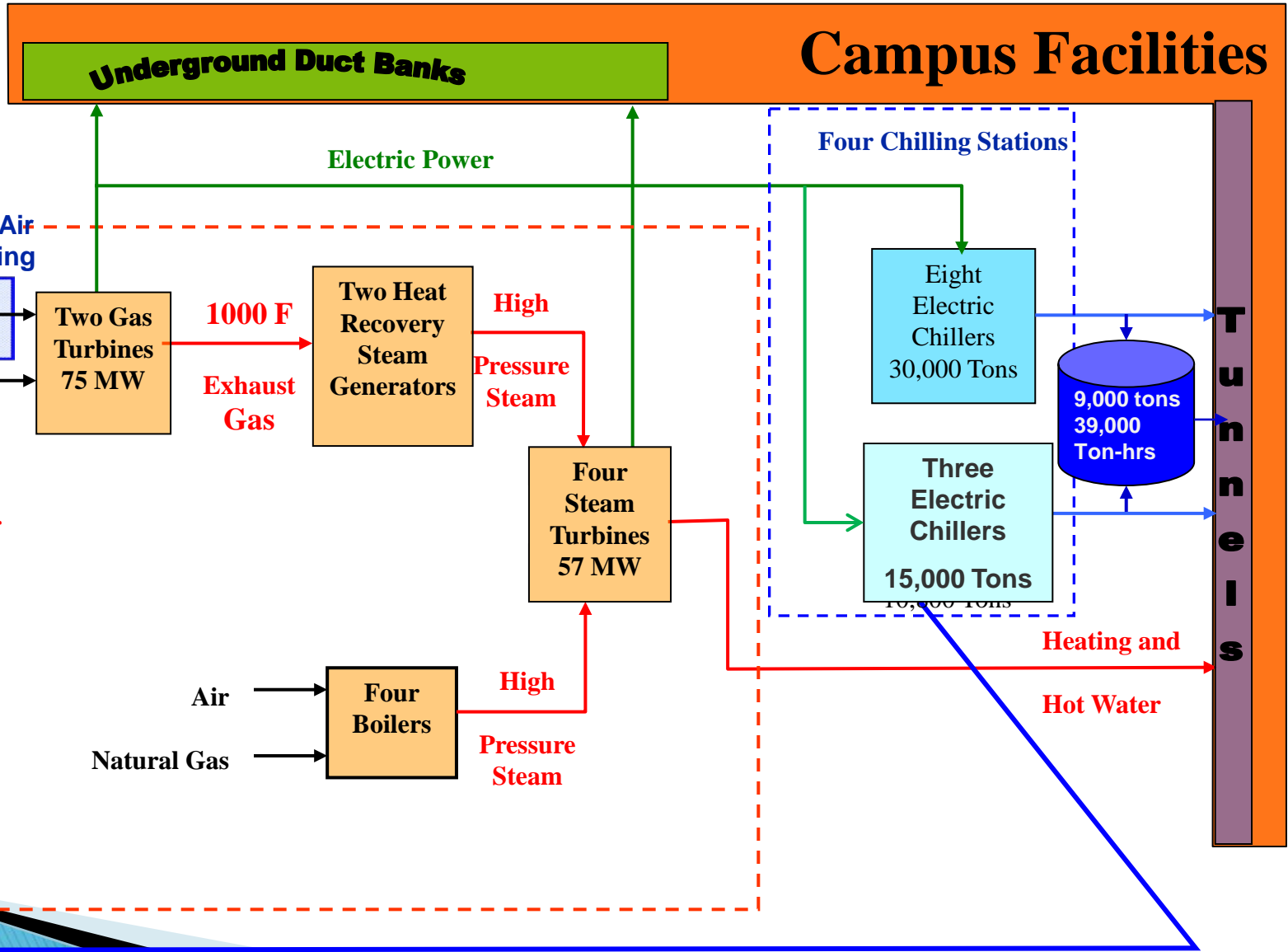
Background

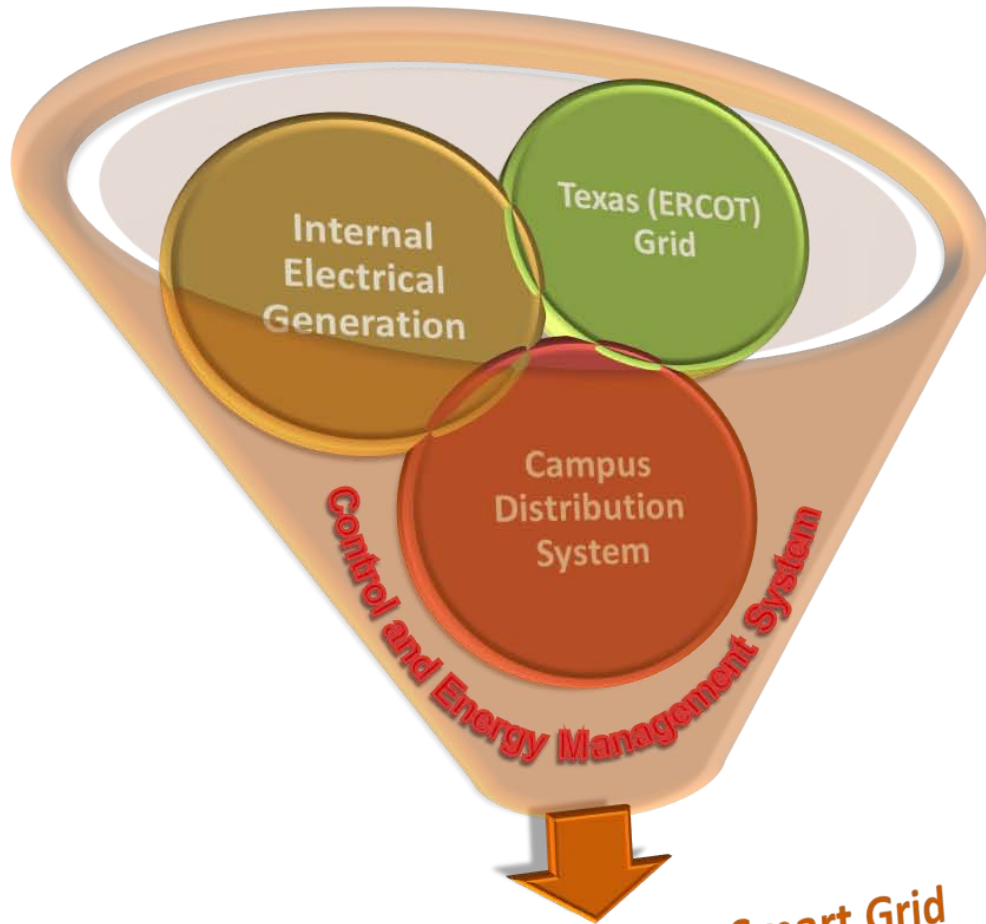
- 100% power, heating and cooling requirements for 16 million sf and 200+ buildings
- Power Plant (by 2010)
 - 137MW of on-site Combined Heat and Power (60 MW Peak)
 - 1.2 million lb/hr of steam generation (300K Peak)
- Chilled Water (BY 2010)
 - 48,000 tons capacity in 4 plants (32K Peak)
 - 4 Million Gallon/39,000 ton-hr TES Tank
- 6 miles of distribution tunnels
- 99.9998% reliability over last 35 Years

**\$50 million
Annual Budget**



System Schematic - 2010

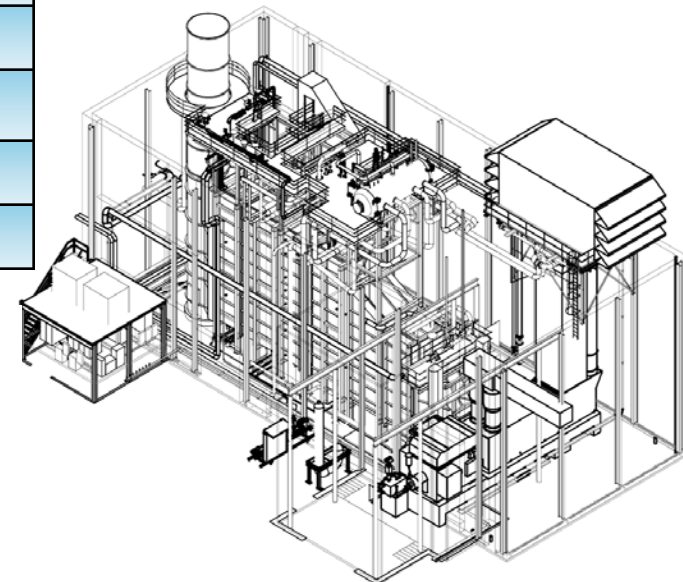




The University of Texas Smart Grid

Major Plant Improvements

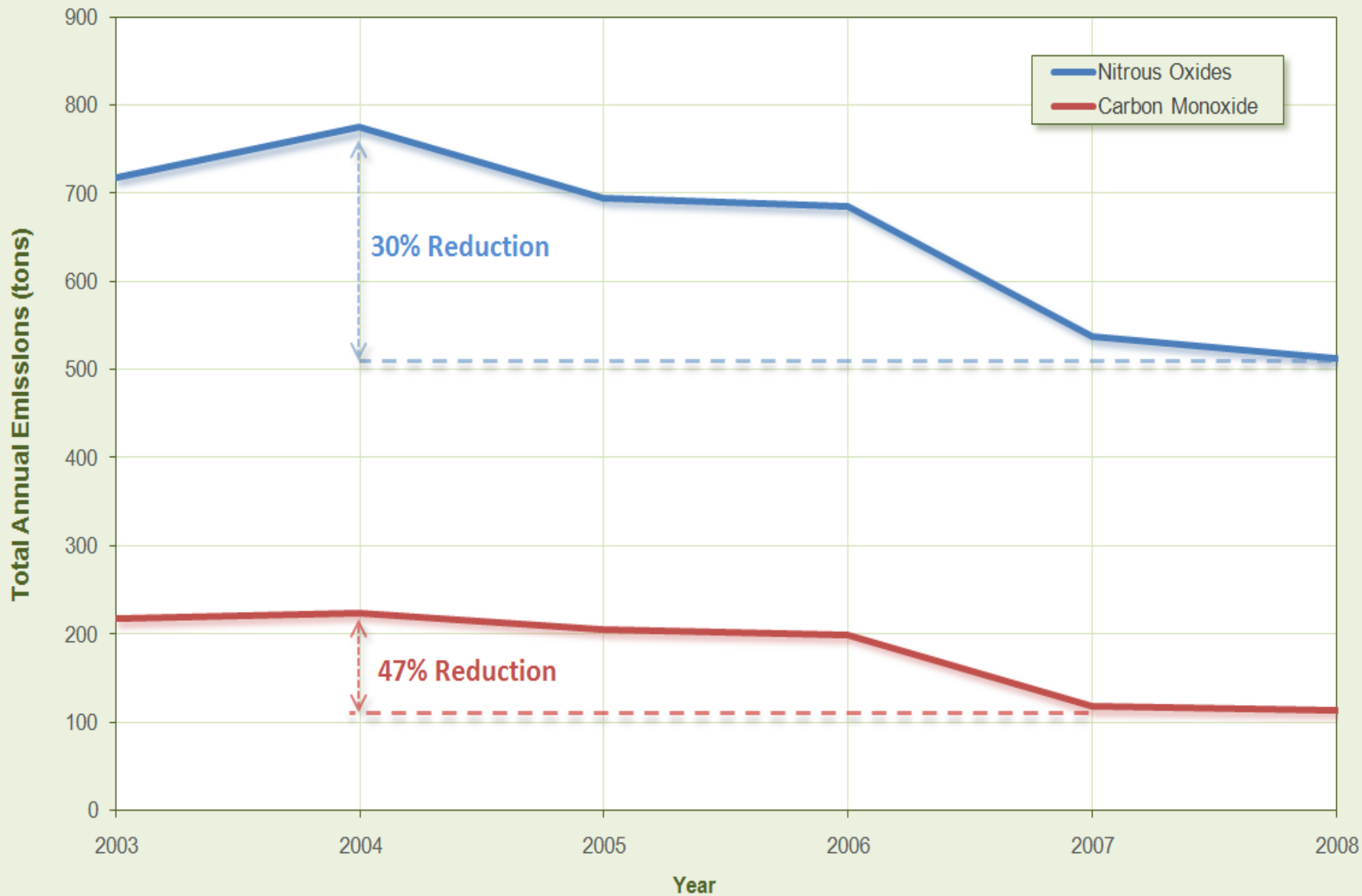
Project Description	Resulting Gas Savings (MMBTU/Year)	Resulting Emissions Reduction (Tons/CO ₂ /Year)
Steam Turbine #9	200,000	11,000
Cooling Tower #1	50,000	2,750
Boiler FGR/NOx Retrofit	200,000	11,000
Steam/Feed Water By-Pass	500,000	27,500
Chilling Station 6	130,000	7,150
Inlet Air Chilling	120,000	6,600
Thermal Energy Storage	40,000	2,200
Chilling Station Modernization	20,000	1,100
Gas Turbine # 10	399,400	21,967
TOTAL	1,659,400	91,267



Plus Use of Proven Technology such as Digital Controls, Plant Optimization Software & Plant and Distribution System Modeling

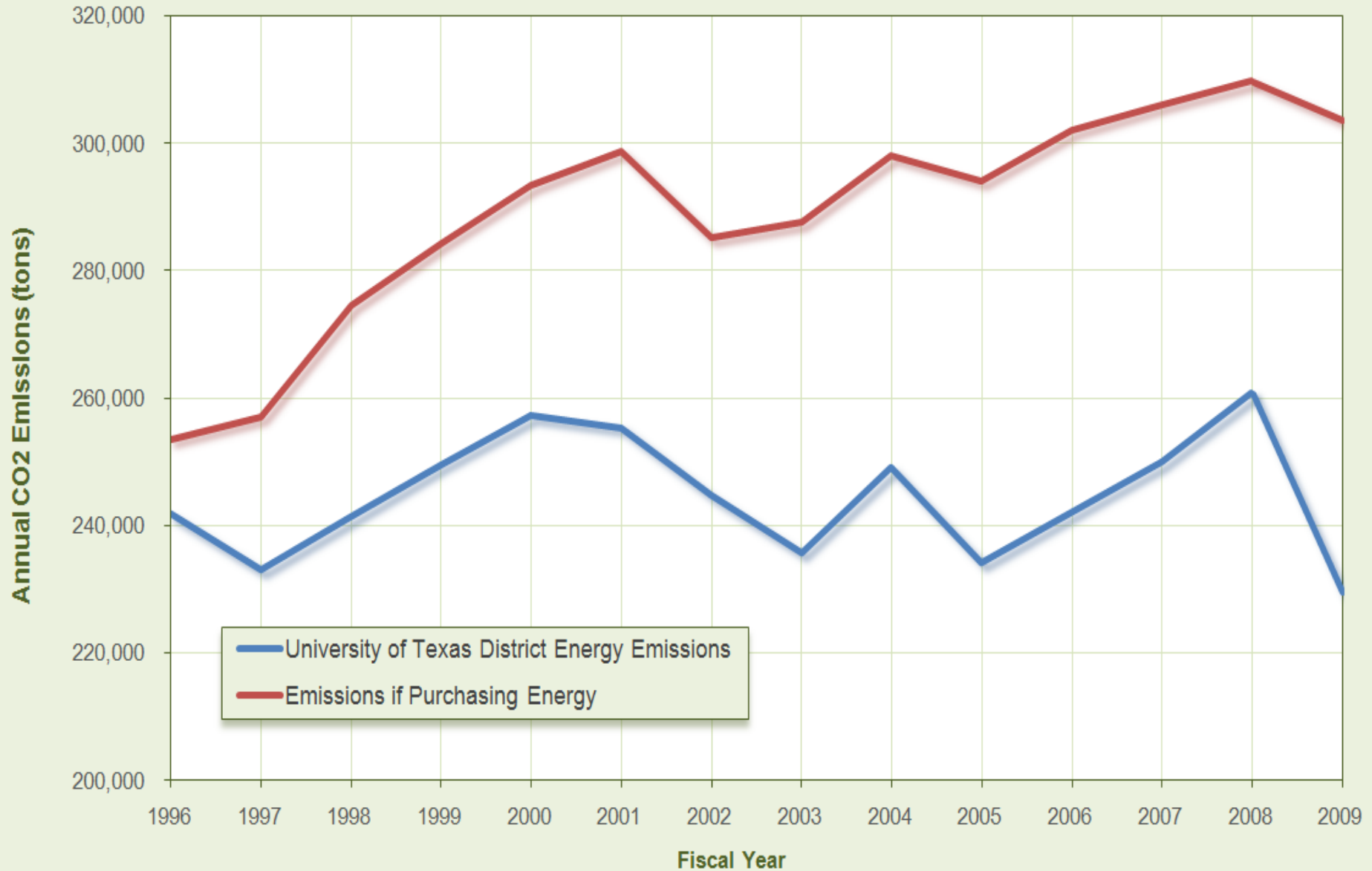
Emissions Reduction Initiatives

University of Texas District Energy System



Comparing Annual CO₂ Emissions

University of Texas District Energy System



Effects of Utility Improvements on Carbon Emissions

