

New CHP Critical Infrastructure Guidelines for the State of Texas

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- A research hub providing independent analysis on energy, air, and water issues to people seeking scientific answers.
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- **WATER** - Analyzing the linkages among water resources, ecosystems and people in support of watershed planning, coastal management and the provision of ecosystem services.
- **AIR QUALITY** - Advancing the science of regional air quality monitoring and modeling; developing emissions-reducing technologies; communicating climate change science and policy

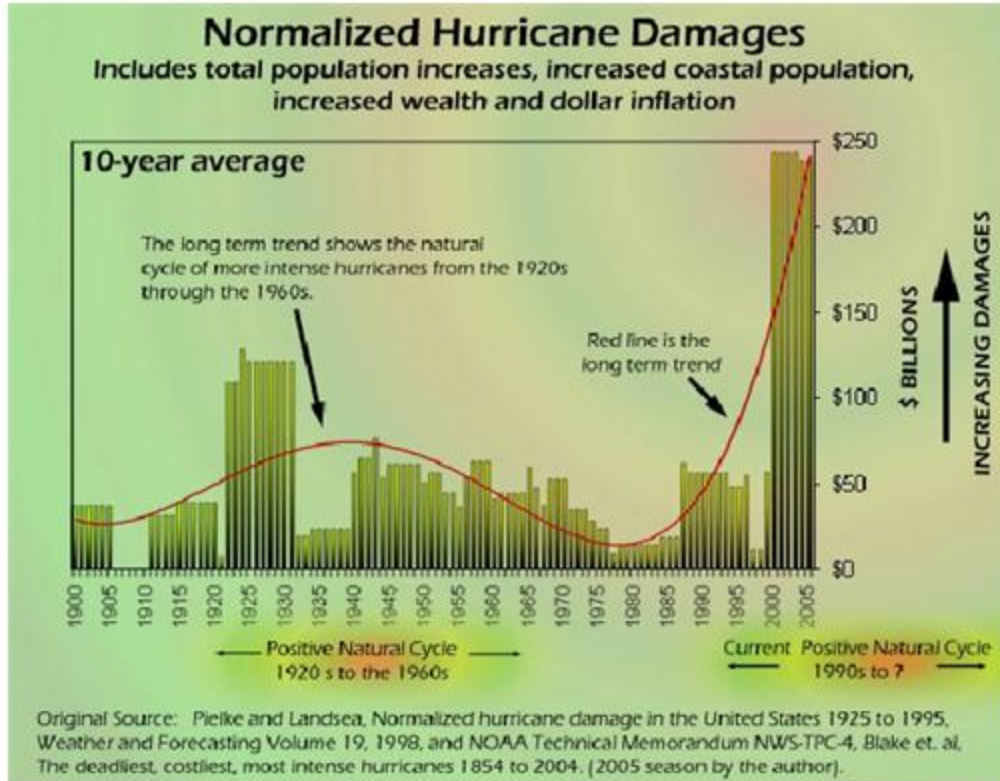
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OPERATIONAL RISK



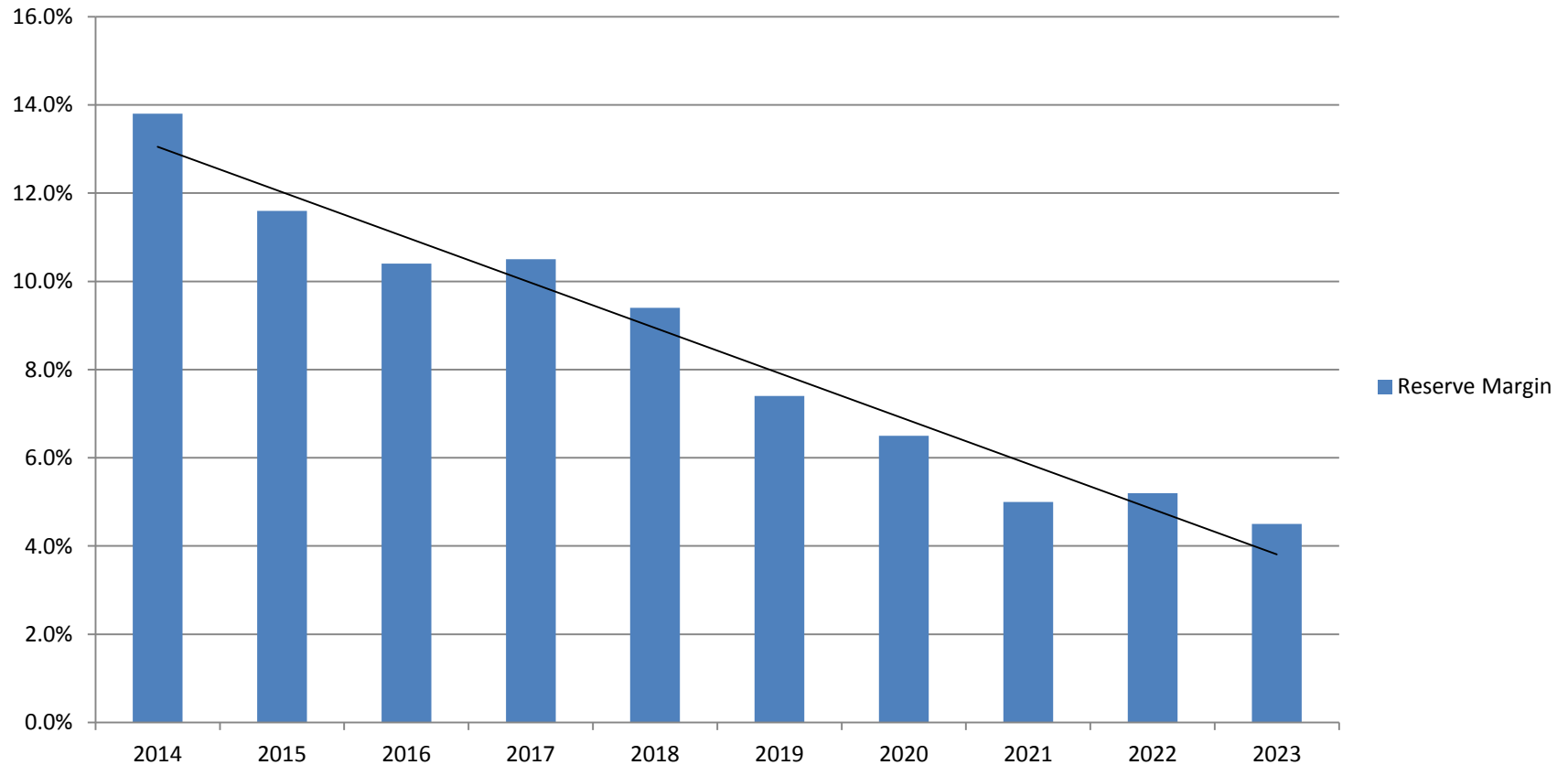
Increasing Operational Risk



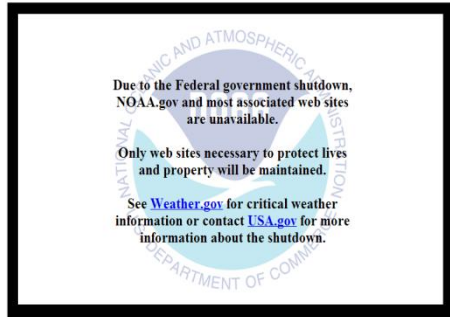
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Increasing Operational Risk: Grid Resiliency

ERCOT Reserve Margin



Increasing Operational Risk: Federal Support



WHY CHP AT CRITICAL INFRASTRUCTURE?



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Operations Continue with CHP

- Improves critical infrastructure resiliency;
- Minimize impact of a grid outage to keep critical facilities operating with no interruption of electric or thermal services;
- Significantly reduced logistic costs to hospitals, schools, prisons, colleges and universities and industry;
- Ensure emergency response services are available and enable faster response to emergencies;
- Mitigate extent of damage and suffering in the community;
- Speed recovery of critical operations.

Standard Backup Generation vs. CHP

Backup Generator	CHP
Typically seldom used; poorly maintained	Run continuously; know it is operating
Typically rely on finite supply of fuel	Permanent source of fuel on demand
May have delayed response time	On-site and operating
Supply only electricity	Supply both thermal and electric loads



CRITICAL INFRASTRUCTURE LEGISLATION



Critical Infrastructure CHP Legislation

- **Critical Infrastructure Legislation:**
 - TX HB 1831 and HB 4409 – passed in 2009
 - TX HB 1864 passed in 2013 – requires SECO to develop guidelines
- Requires all critical governmental facilities **to formally consider the feasibility** of implementing Combined Heat and Power (CHP) technology prior to:
 - New construction or extensive renovation
 - Implementation cost is \$2 million or more, based on the initial cost estimate. (34 TAC Chapter 19, Subchapter C, Rule 19.33)
 - Replacing major heating ventilation and air conditioning equipment of critical buildings and facilities

Legislative Requirements

Identify which government owned buildings and facilities are critical in an emergency situation.

Prior to constructing or making extensive renovations, the facility must obtain a **feasibility study** to consider the technical opportunities and economic value of implementing CHP.

If the expected energy savings of the CHP system exceeds the expected costs of purchasing, operating, and maintaining the system over a 20-year period, equipping the facility with CHP is **preferred**.

The state agency does not need approval of the State Cogeneration Council if it is a critical facility



IDENTIFICATION OF FACILITIES



What is a critical facility?

- **A critical facility :**
 - Is **owned by the state** or a political subdivision of the state;
 - **Serves a critical public health or safety function** throughout a natural disaster or other emergency situation, even when a widespread power outage may exist for days or weeks;
 - Is **continuously occupied and maintains operations** for at **least 6,000** hours each year; and
 - Has a **peak electricity demand exceeding 500 kilowatts.**

Who must comply?

Applies to all state agencies:



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Who must comply?

All political subdivisions of the state
if considered a critical facility.



Included Facilities

Water or
Wastewater
facilities

Hospitals and
nursing homes

Command and
control centers

Datacenters

Food
Processing and
food storage

Hazardous
waste
operations

Shelters

Prisons and
jails

Police and fire
stations



CHP REQUIREMENTS AND STUDY



Requirements for CHP System

Provide a facility with 100% of its critical electricity needs; primary source of thermal energy;

Can sustain emergency operations for at least 14 days;

Meets a minimum efficiency of 60%;

Energy savings must exceed installation, operating and maintenance costs over a 20-year period;

Ability to operate during grid outage;

Must be on-site;

If within flood zone, must be placed above anticipated flood level.



Feasibility Study

Evaluate the **technical and economic** feasibility of a CHP project in the critical facility.

Feasibility Screening Report:

- The feasibility screening must be conducted by:
 - Engineering or architectural firm with experience developing CHP projects.
- The report must include:
 - Provide a comparison between base case and CHP case; included in the report will be simple payback in years and total operating costs to generate on site.
 - The operating and maintenance cost of the system over a 20 year period.
- A report of the screening must be provided to the State Energy Conservation Office for review.



Feasibility Study

To conduct the study:

- General Facility Information
- 12 months of electric and natural gas consumption data
- Utility Rates
- Natural gas pressure
- Identify any existing onsite generation
- Operating hours of facility.
- Type of thermal loads throughout the year
- Type of cooling loads and size of load in tons



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