



Conceptual Model:

*General Permit for the Construction &
Operation of New or Existing Emergency
Engines and Distributed Generation
Resources*



August 9, 2007

SIPRAC





Legislative Background



- ★ PA 07-242 Electricity and Energy Efficiency Act
 - Section 102 required DEP to issue a notice of intent for the EE/DG general permit by August 3rd
 - Section 103 requires DPUC to establish a pilot grant program to fund emission controls for emergency engines in conjunction with environmental approvals for increased operation (DPUC Docket # 07-07-37)
 - Intent of pilot is to displace some reliability must run (RMR) units w/ quick start capacity that should reduce federally mandated congestion charges (FMCCs) and provide a net air quality benefit



DPUC Existing Programs

★ 2005 Energy Independence Act

- DG capital grant program - \$/kW grants in SWCT and greater CT
- Funded 118 MWs of emergency diesel generation
- Funded 244 MWs of cleaner CHP projects
- Most diesel is already on-line; larger CHP projects still being constructed
- On July 25th DPUC issued an order temporarily suspending the DG capital grant program
- A DPUC-ordered work group (UI, CL&P, OCC, project sponsors and DR aggregators) is assessing “cost effectiveness” of the program and must report back to DPUC by August 13th





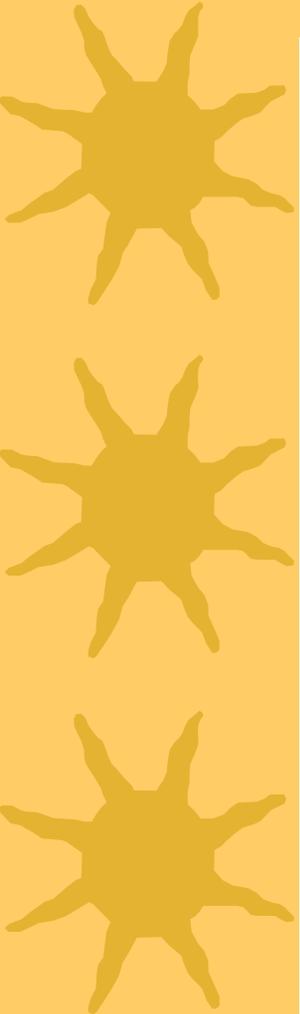
Emergency Generators in CT



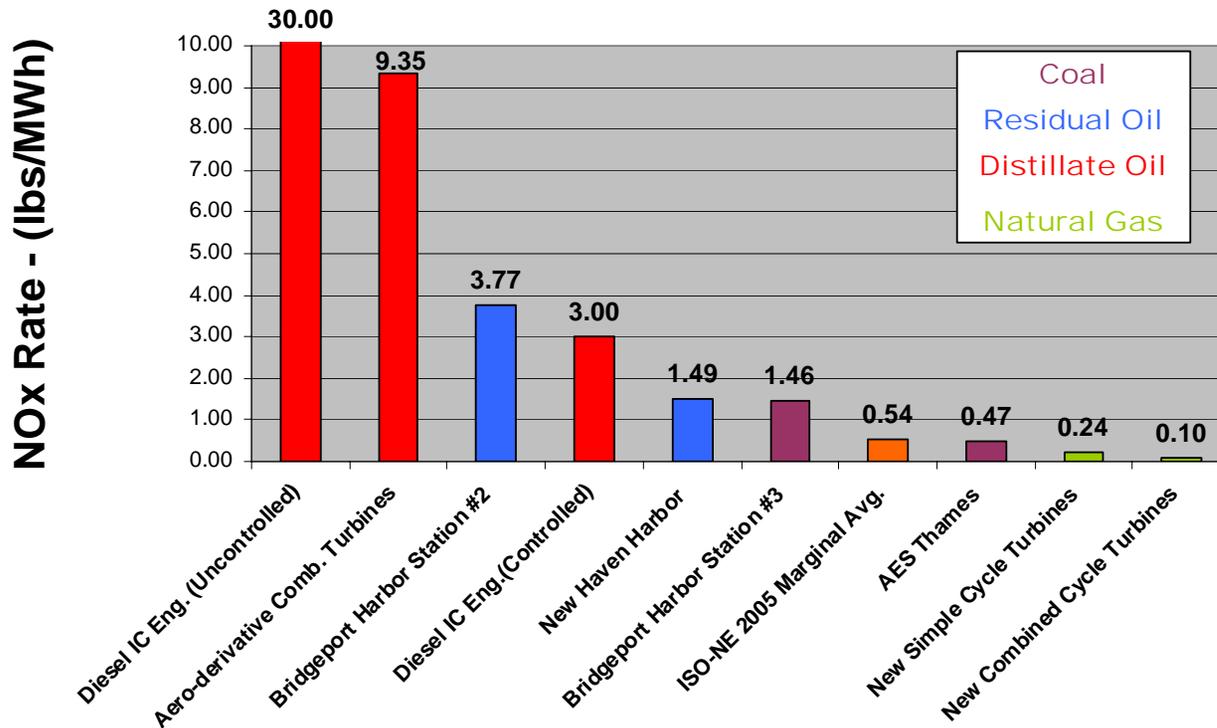
- ★ ISO-NE believes there to be more than 600 MWs of diesel emergency generation capacity in Connecticut
- ★ Not all of this capacity is enrolled in ISO-NE's demand response program
- ★ If all 600 MWs run (uncontrolled) they would produce NOx emissions at the rate of **9 tons per hour!**
- ★ Clearly conflicting with our OTC commitment to reduce peak day emissions by 25%



Environmental Impact of Diesel Generators



NOx RATES for ELECTRIC GENERATION UNITS IN CONNECTICUT

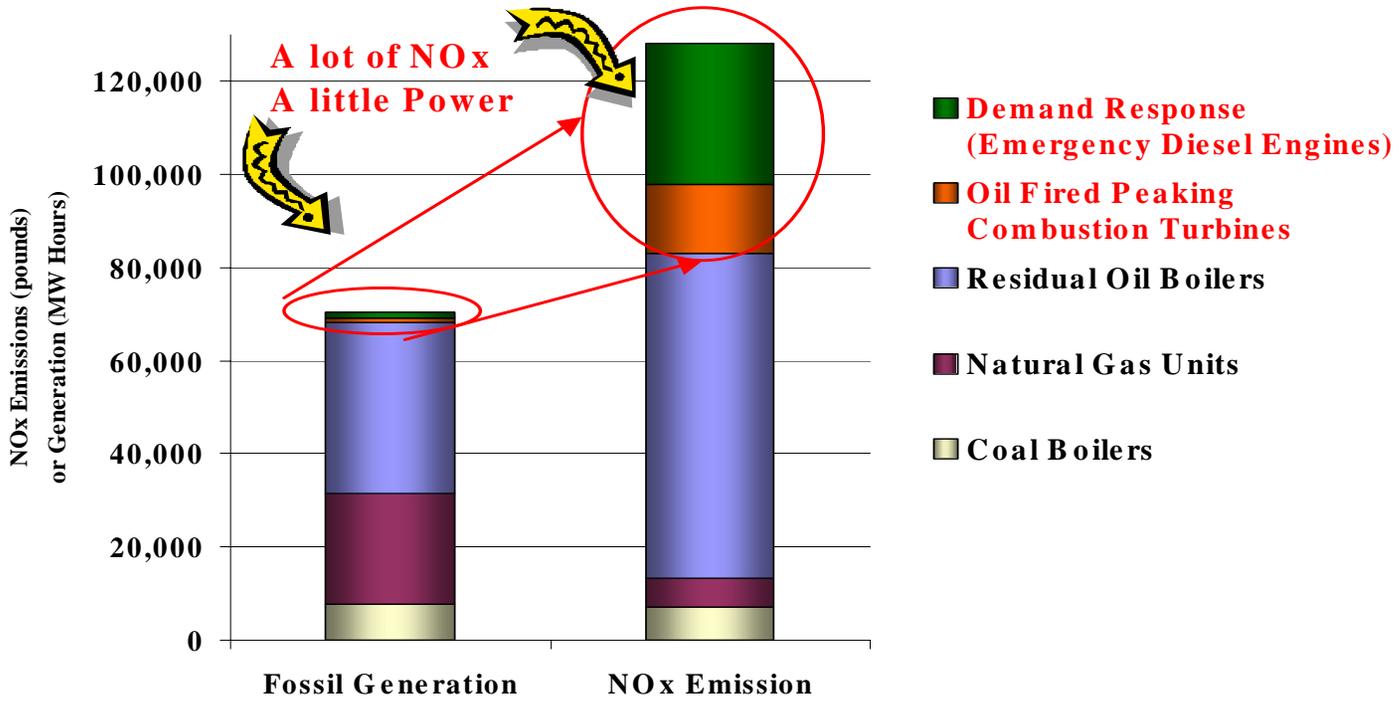




Environmental Impact of Emergency Generation



Connecticut Fossil Fuel Fired Electric Generating Units Peak Day Analysis





Current Paths Engines May Operate Under



- ★ Section 42 - Distributed Generators (< 15MW)
 - Very stringent, diesel engines cannot meet applicable NO_x limits
 - No sources operate under this rule
 - 180-1350 hours/year (size dependent)
 - Certification of emissions or performance testing
 - 15 ppm sulfur fuel
 - No fee
- ★ Section 3b - Emergency Engines (e.g., those that only operate at OP4Step12 conditions)
 - 300 hours/12 months
 - 15 ppm sulfur fuel
 - No fee
- ★ Individual Permit – Distributed Generators
 - BACT – controls to meet 2009 NO_x RACT
 - Public participation
 - 15 ppm sulfur fuel & other conditions the Commissioner may require
 - \$3,000 permit fee



Issues w/ Current Scenario

- ★ No incentives to go with best environmental outcome
- ★ Reliance on diesel generation in LFRM and PA 07-242 for capacity
 - Sooner or later, we risk that the capacity will be needed and it will run
 - If we don't require controls, there will be significant increase in emissions
- ★ Recommendation:
 - Regulate LFRM units through general permit, and
 - Pursue additional regulation of DR/OP4-12 units in a phased approach that would first address the largest units in the urban centers





General Permit Objectives



★ Allow quick start diesel emergency generators to provide capacity

★ Only allow these engines to provide power if controlled

★ Obtain measurable emissions reductions commensurate with SIP obligations and OTC HEDD commitment

– (e.g., a 25% NO_x reduction on peak days)

– <http://www.ct.gov/dep/lib/dep/air/climatechange/otcheddmou070307.pdf>





GP Concepts



- ★ All of CT or just the SW load pocket or even just Stamford & Norwalk – TBD by DPUC
- ★ Fee to register– not to exceed \$5,000 per CGS section 22a-6f, allows inventory development
- ★ Cap and corrective action
- ★ Set daily cap for peak demand days using the 3 year average of actual peak day emissions from RMR boilers and aero-derivative comb. turbines
- ★ If the cap is exceeded all permittees take SEP-like actions for energy efficiency, renewable energy, CAIR allowances or diesel retrofits.

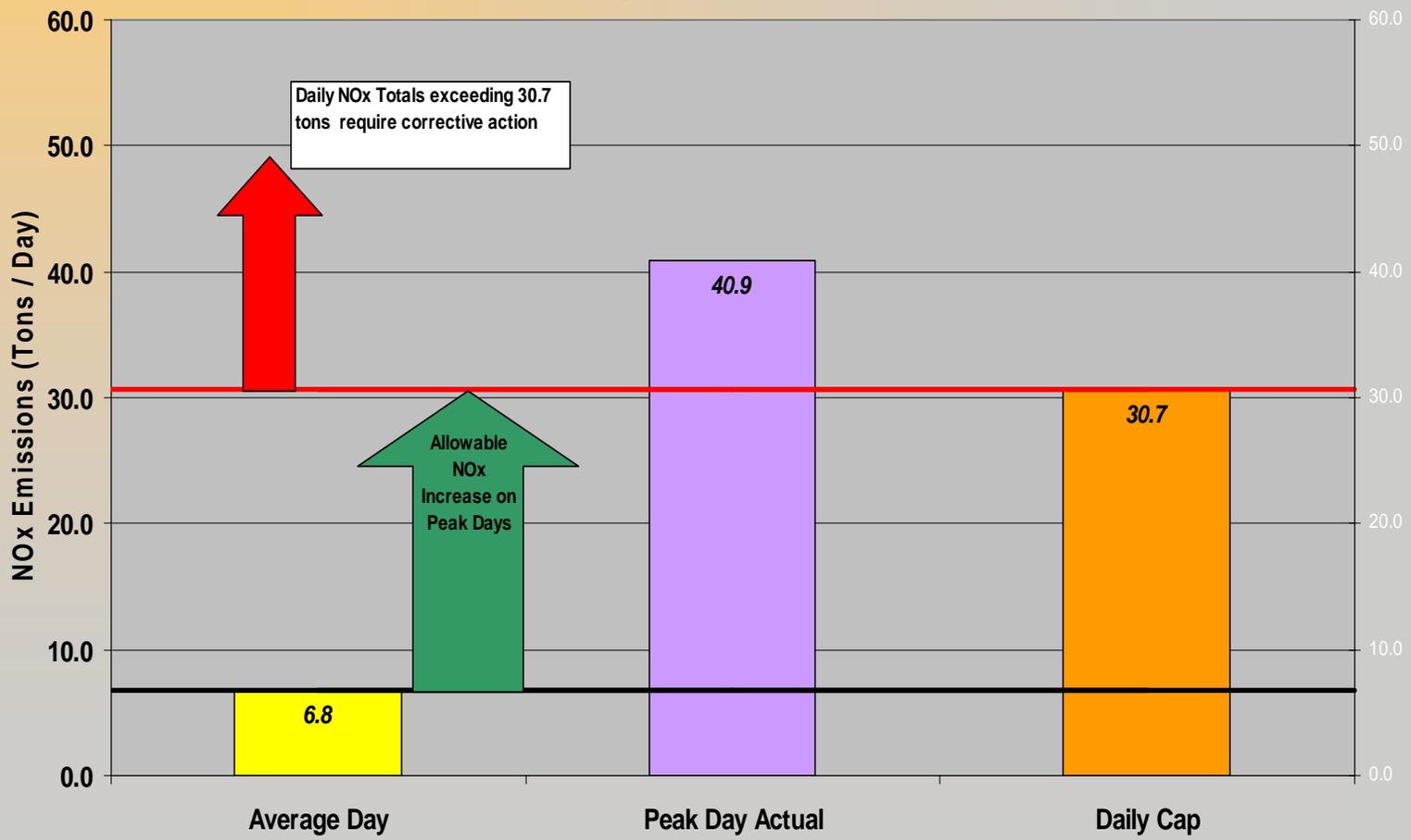


Proposed Daily Cap



PEAK DAY NOx CAP FOR GP DG ENGINE PROGRAM

{Average values for 2004-2006}





Setting The Cap

- ★ Ozone season average NO_x emissions are 6.8 tons per day over last three years (2004-2006)
- ★ Average actual peak day emissions were 40.9 tons per day over last three years
- ★ OTC reduction target is 25% from the peak day (e.g., 30.7 tons per day)
- ★ Require corrective actions for **all approved sources under the GP** if any day exceeds 30.7 tons of NO_x during the ozone season





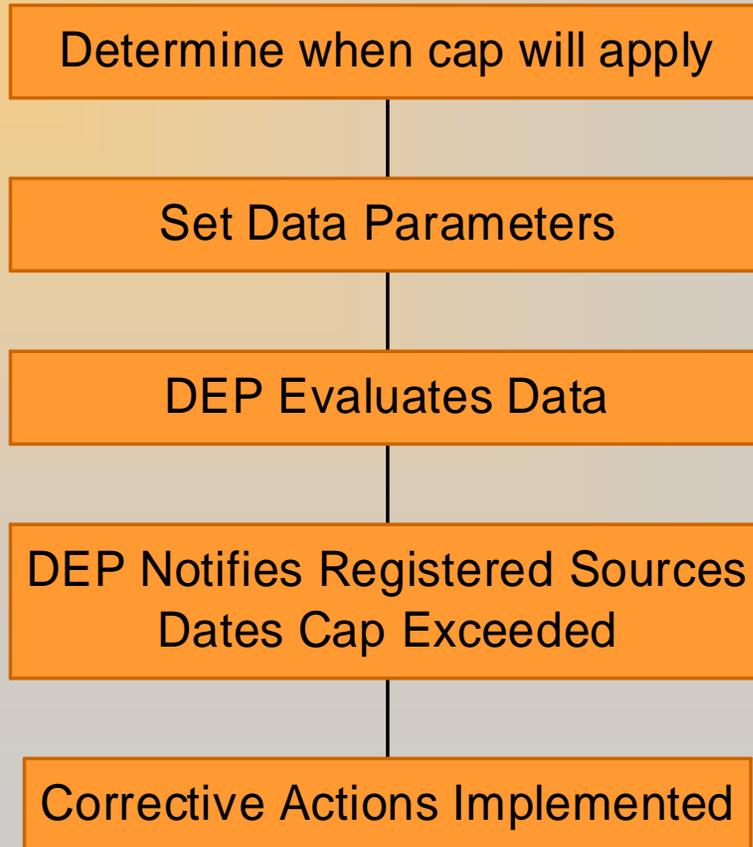
Notes on the Cap

- ★ Daily NO_x emission cap developed to ensure environmental benefit
- ★ Daily cap is based on actual emissions on these highest demand days
 - August 30, 2004
 - July 27, 2005
 - August 2, 2006
- ★ Units in the cap include RMR boilers and aero-derivative combustion turbines
- ★ The daily cap is then reduced by 25% consistent with DEP's commitment to the OTC HEDD effort





Implementing the Cap





General Permit Requirements

- ★ Minimum setback distance from the property line of 50-100 feet
- ★ Air pollution control equipment requirements for NO_x and PM capable of achieving a $\geq 90\%$ reduction
- ★ Limitations on the hours of operation

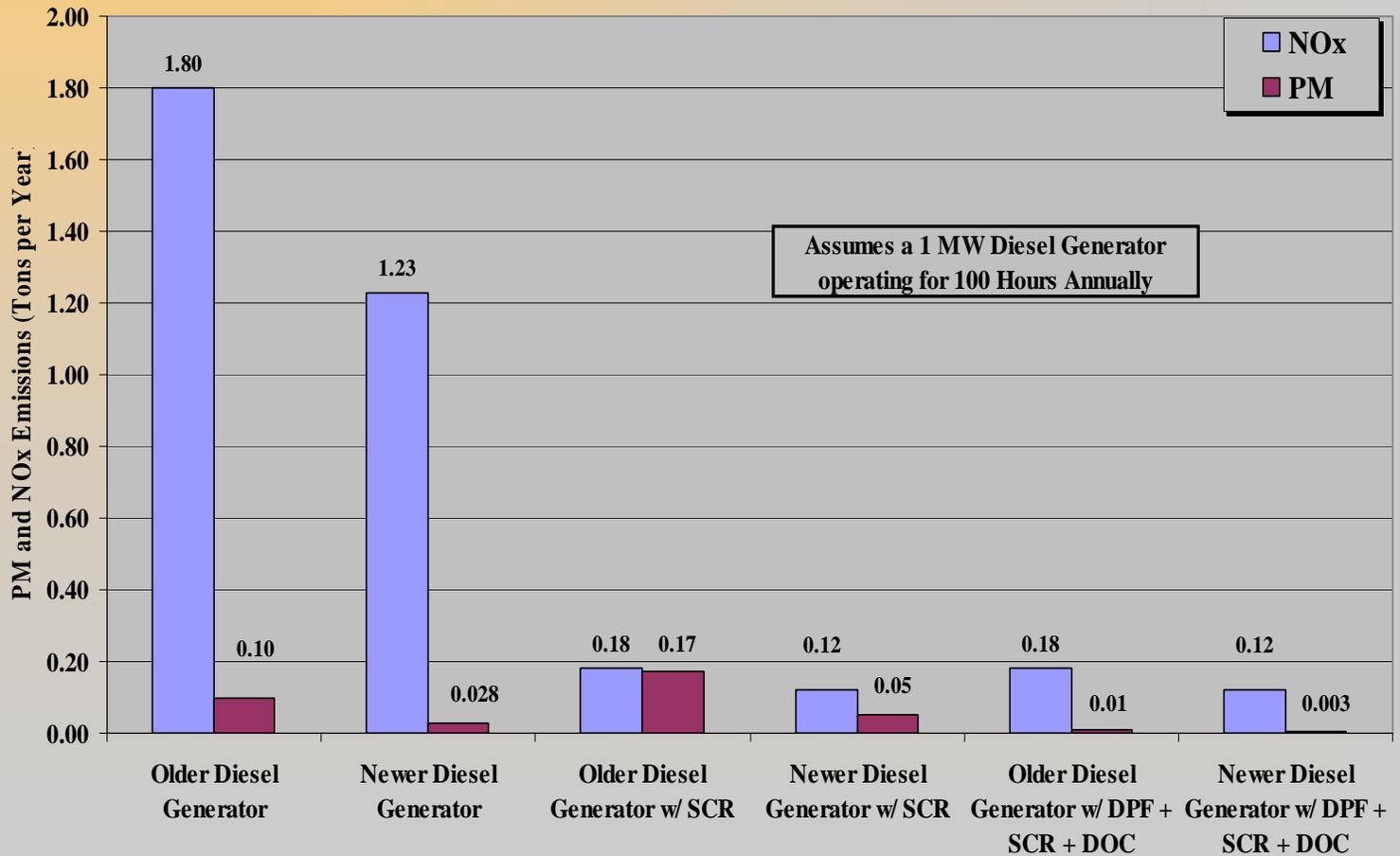




NOx and PM Emissions



Diesel Generator Emissions





General Permit Requirements



- ★ Directionally correct emissions offsets at a ratio defined by DEP or an alternative method to support Connecticut's energy and environmental goals (e.g., "cap and correct")
- ★ Monitoring, recordkeeping and reporting to determine compliance, quantify emissions, evaluate operations, and enable assessment of environmental and economic impact,



General Permit Requirements

- ★ Any other provision deemed necessary by DEP, including but not limited to:
 - Allowable fuels (e.g., percent sulfur limit)
 - Maximum Emission rates (input or output based)
 - Requirements to be implemented if the general permit pilot program results in greater air emissions than would have occurred under baseline conditions





Assessing Environmental Results



★ Determine overall reduction in peak day emissions

★ Determine reduction in annual emissions



★ Determine added benefit of corrective actions

★ Determine multi-pollutant benefits

– Carbon

– Air toxics



★ Options to address further emission reductions



The Process

- ★ Notice issued outlining DEP's proposal & request info to develop the GP
 - Comments due by September 7th
- ★ Issue general permit notice by September 30th
- ★ Participate in DPUC docket 07-07-37
- ★ Adopt general permit by December 1, 2007
- ★ Pursue regulation change to eliminate other compliance paths to ensure that sources receiving energy market payments are clean or controlled

