



# ERTAC EGU Growth Committee – Update and Overview

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# Presentation Overview

- Part 1 – Process Overview and Timelines
  - What is the ERTAC Growth Committee?
  - Criteria for product
  - Committee structure
  - Progress and timeline
  
- Part 2 – Product Overview
  - How does it work?
  - What will it do? What will it NOT do?
  - Upsides and downsides
  - Outstanding issues

# ERTAC EGU Growth

- Eastern Regional Technical Advisory Committee
- Collaboration:
  - NE, Mid-Atlantic, SE, and Lake Michigan area states;
  - Industry; and
  - Multi-jurisdictional organizations
- Goal: Develop Methodology to Create EGU FY Emission Inventories
  - Acceptable to EPA
  - Conservative predictions of activity
  - Transparent
  - Inexpensive
  - Relies on base year activity data
  - Flexible

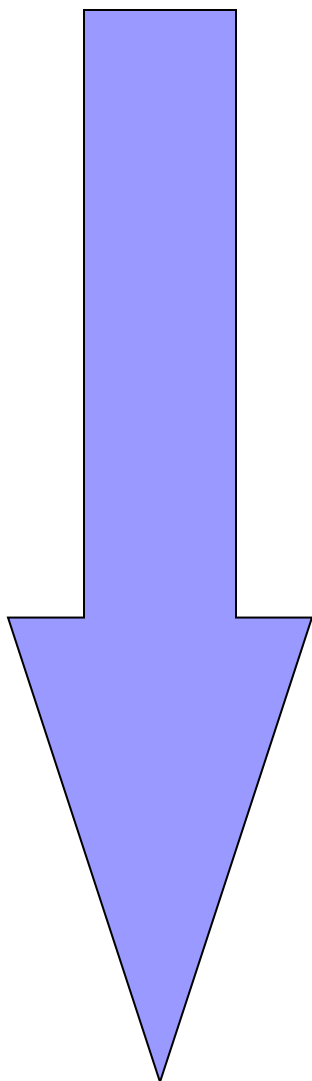
# Structure: Subcommittees and Co-Chairs

- ERTAC EGU Growth Committee Co-chairs:
  - Laura Mae Crowder, WV DEP
  - Bob Lopez, WI DE
  - Danny Wong, NJ DEP
- Four Subcommittees and Subcommittee Leads:
  - **Implementation**/Mark Janssen, LADCO: Create logic for software
  - **Growth**/Bob Lopez, WI & Laura Mae Crowder, WV: Regional specific growth rates for peak and off peak
  - **Data Tracking**/Wendy Jacobs, CT: Improve default data to reflect state specific information
  - **Renewables & Conservation Programs**/Danny Wong, NJ & Laura Boothe, NC: Characterize programs not already included in growth factors

# Progress So Far ....

- Development:
  - Methodology created, documentation crafted
  - Preprocessor running on Linux and Windows platforms (GA, VA, MARAMA, IN, NJ, OTC)
  - Working out bugs-continuing to move forward making adjustments to methodology as needed; very limited resources
  
- Estimating Growth in Generation:
  - Growth rates and regions defined
  - Updating with current AEO; working to update growth rates table and crosswalk
  
- Input File Development:
  - 2007 unit file and known future controls file reviewed by states
  - Further state input at future date

# Timeline



- January, 2012
  - Preprocessor debugging
  - Preprocessing of databases
- February, 2012
  - Main processor debugging
  - Initial multi-state test runs
  - Update of growth factors
- March, 2012
  - Documentation updates
  - State review of unit and controls data
- April, 2012
  - State/MJO runs of full input files
  - Post processing of data

# Questions on Overview and Timeline

# How does the algorithm work?

## Inputs

- Starting Point: BY CAMD activity data
  - Gross load hourly data, unit fuel, unit type, location
  - Units categorized by type, fuel, region
- States provide known new units, controls, retirements, fuel switches, etc
- Energy Information Agency annual energy growth factors
- NERC peak growth factors



# How does the algorithm work?



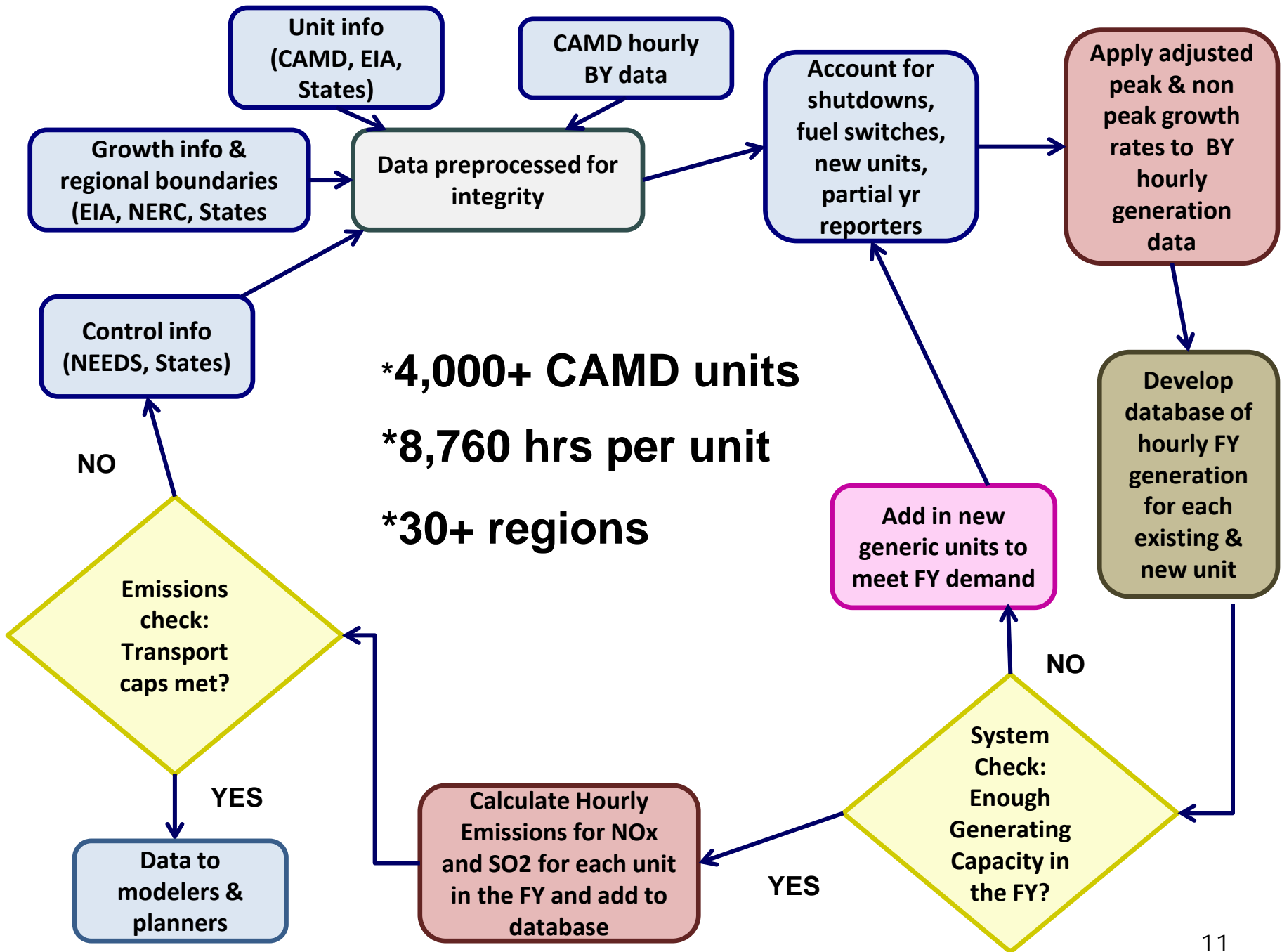
## Processing

- Project growth by region: peak and nonpeak
- Adjust growth to account for unit retirements, new units, fuel switches
- Allocate growth on an hourly basis to units by region and type
- Check system integrity: Does enough generation exist to satisfy future needs?
- Check policy: Will units meet program caps?

# How does the algorithm work?

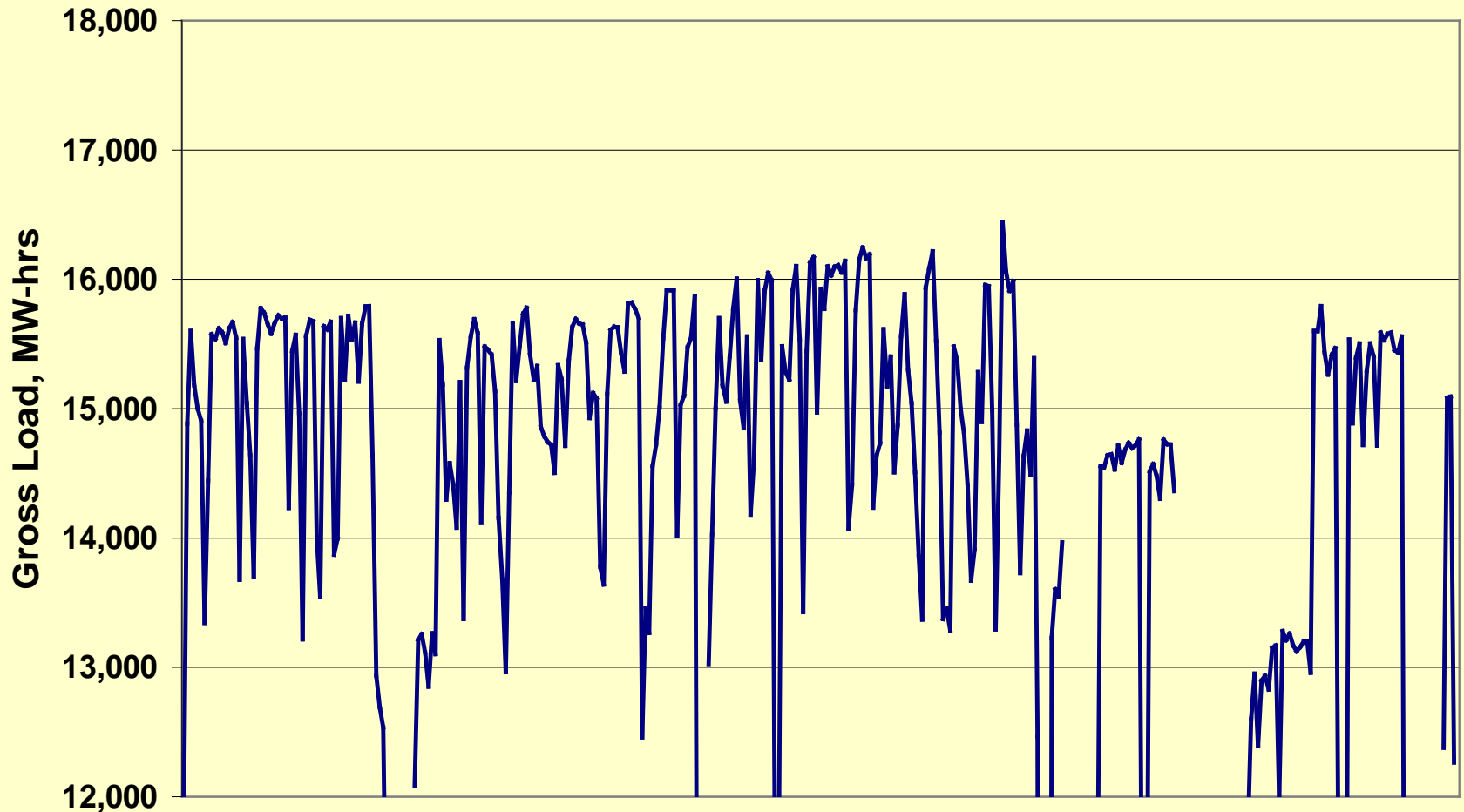
## Iteration-State Input

- Improve unit data (new units, retirements, fuels, operation, etc)
- Improve controls anticipated or on-line
- Re-allocate growth on an hourly basis to units by region and type
- Re-check system integrity: Does enough generation exist to satisfy future needs?
- Re-check policy: Will subject units meet the caps under various programs?



# Conceptual example.....

*Coal Fired, Base Load Unit-0.97 annual GR; 1.05 peak GR*



***BY activity ~ 4.6 million MW-hrs***

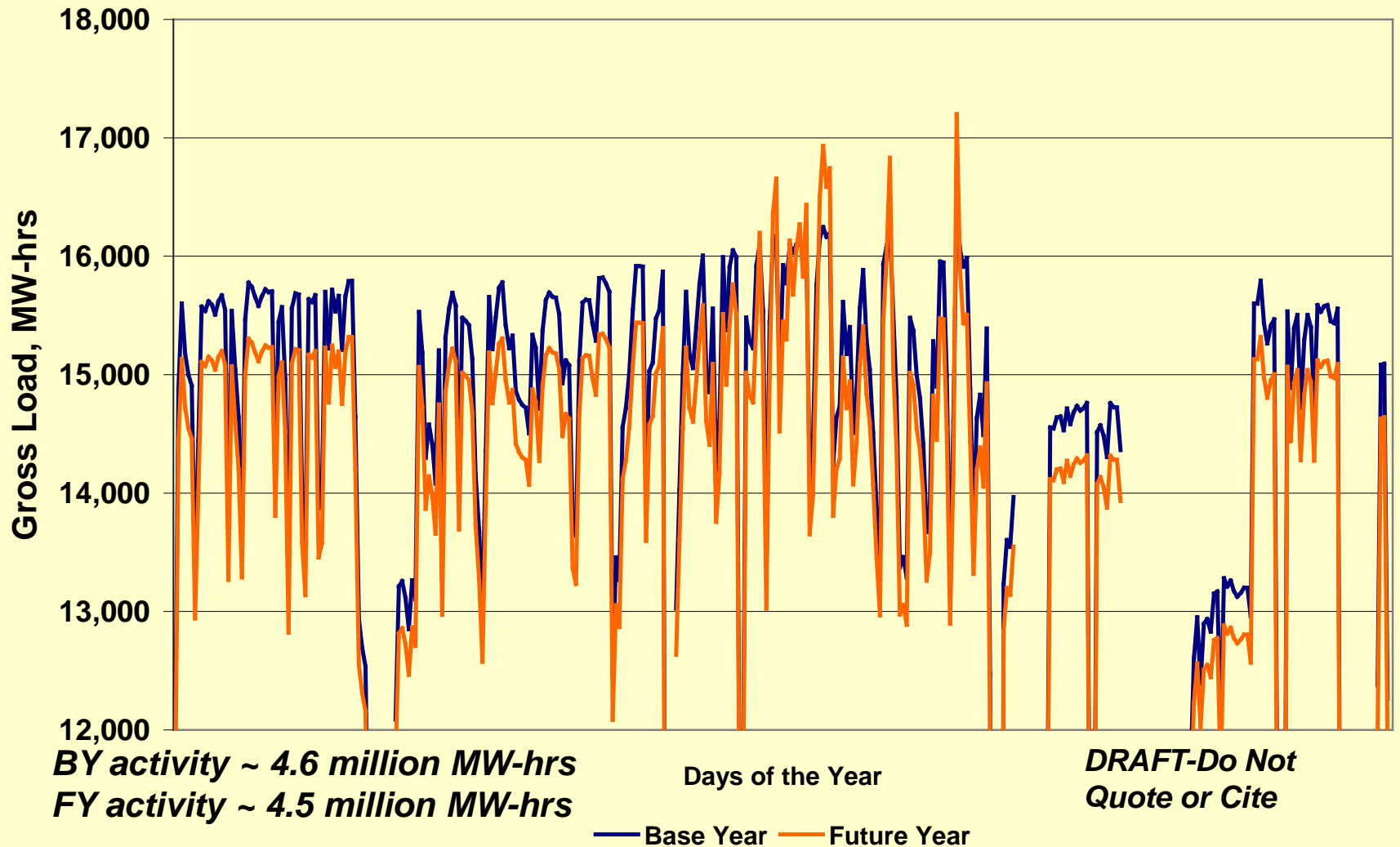
Days of the Year

***DRAFT-Do Not  
Quote or Cite***

— Base Year

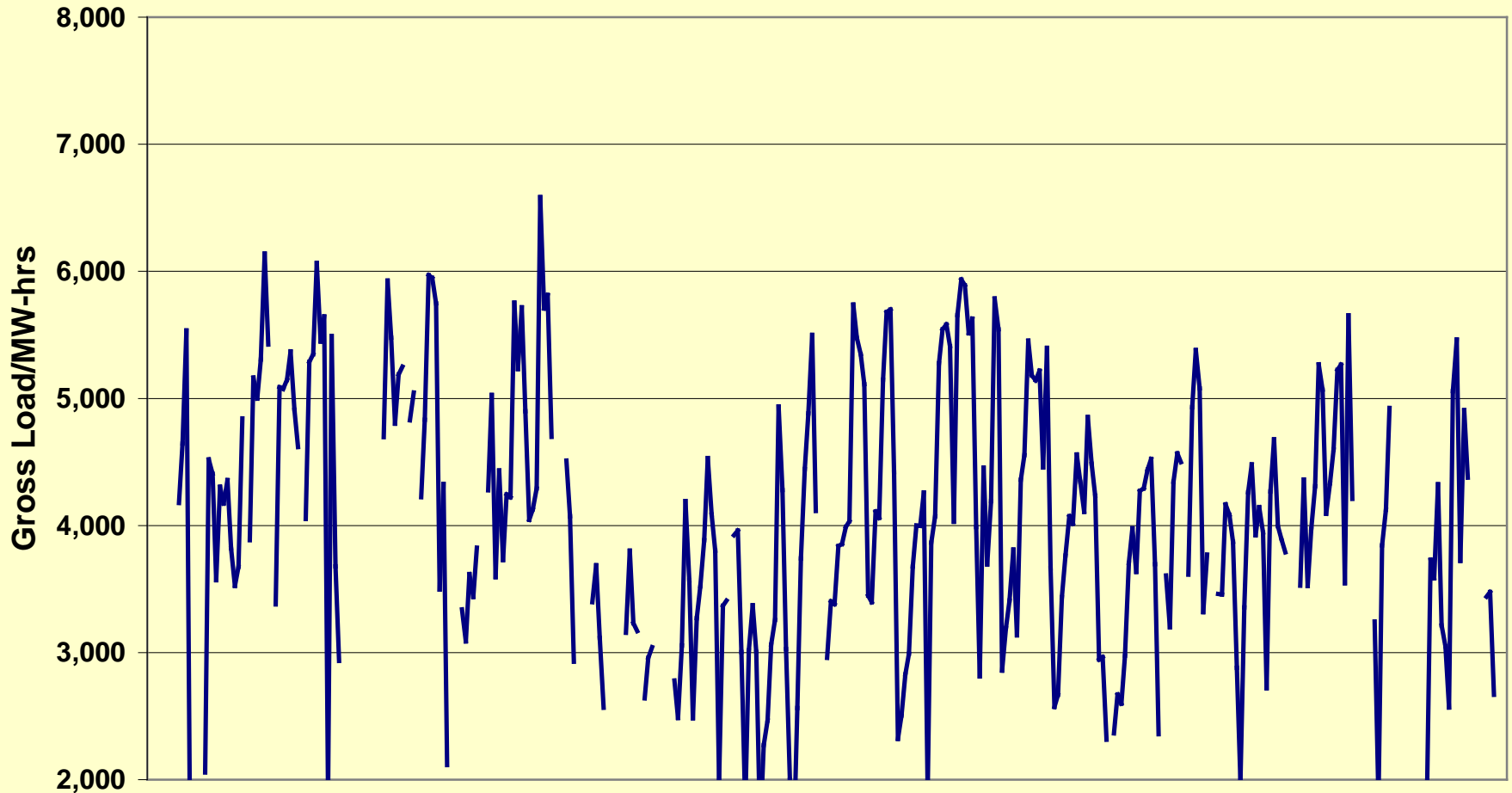
# Conceptual example.....

*Coal Fired, Base Load Unit-0.97 annual GR; 1.05 peak GR*



# Another conceptual example.....

Combined Cycle, Annual GF=1.02, Peak GF=1.10



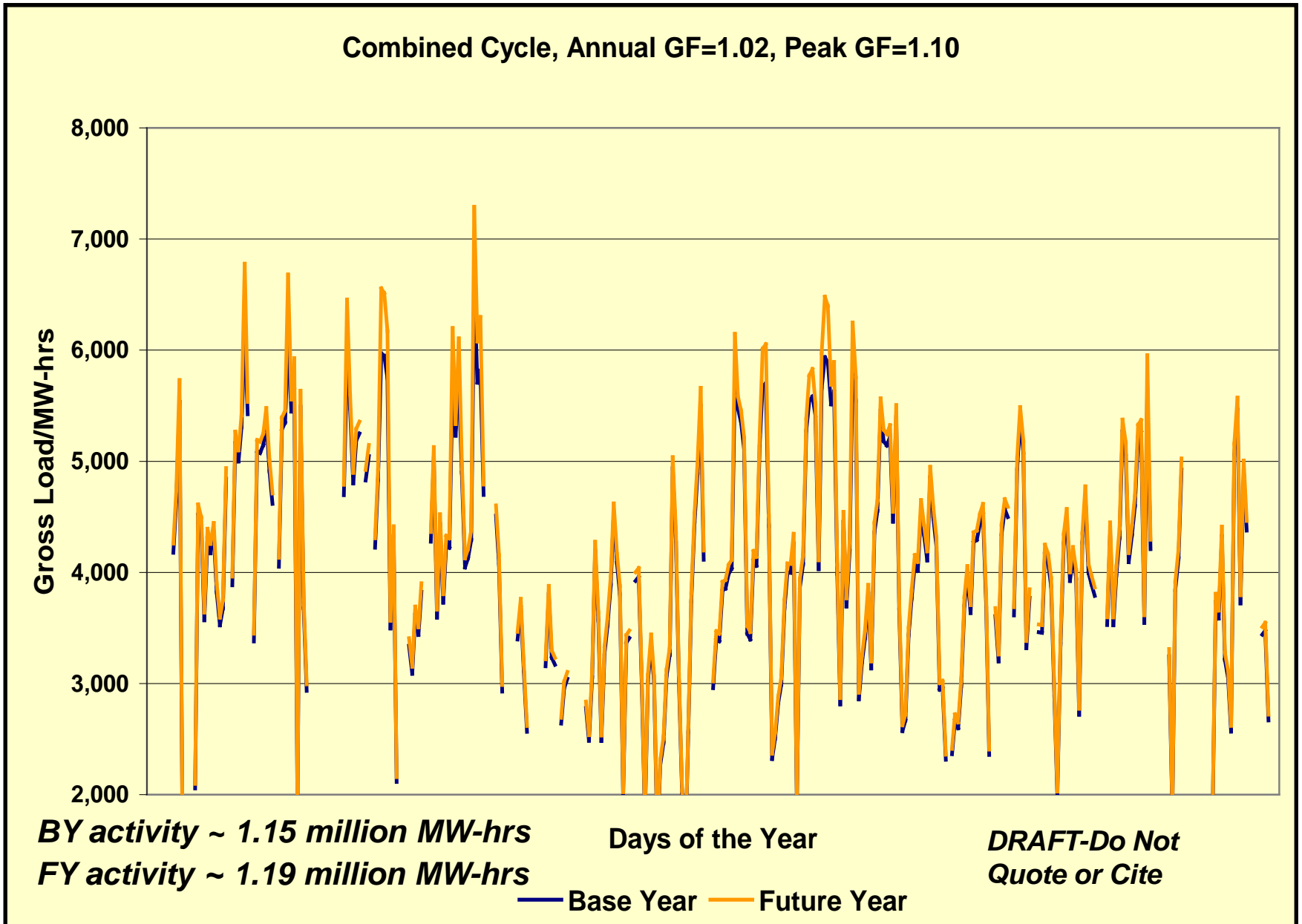
*BY activity ~ 1.15 million MW-hrs*

Days of the Year

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Quote or Cite*

— Base Year

# Another conceptual example.....



# What You Can Expect....

- Provides growth estimates for
  - CAMD reporting units
  - Coal, oil, natural gas
- Regional boundaries delineate NYC
  - Flexibility in growth rates
  - No unit retirements w/o state input
- Future year hourly temporal profiles for
  - NO<sub>x</sub>, SO<sub>2</sub>, activity data
  - New units that didn't operate in the base year



# What You Can Expect....

- Ease of use
  - Able to run on Windows and Linux systems
  - MJOs, modeling centers, others should be able to use it
- Low cost
  - State resources to keep data input files current
  - Staff time to run and evaluate results
- Flexibility-inputs can be adjusted to address regional issues

# Attributes of Results

- Stable
- Temporally, should resemble base year
- Transparent
- Cheap compared to alternatives

# Don't Get Your Hopes Up About...

- SMOKE ready files - post processing will be needed for pollutants other than SO<sub>2</sub> and NO<sub>x</sub>
  
- Post processing also needed for SIP inventory data
  
- Ease of Use
  - Takes time and practice to learn to run the model, interpret the results, debug the input files
  - The input files will need significant maintenance over time by state staff

# Don't Get Your Hopes Up About...

- Pre-pre-processing may be needed for units with significant issues in the base year data (partial reporters, substituted data, etc)
- Post processing of results will be needed for policy determinations
- Detailed, organized, step-by-step documentation

# Comparison: IPM & ERTAC

## IPM

- Results 100% EPA approved
- Results provided as-is, no post processing needed
- Results for all types of power producers
- Hi cost for state/MJO runs
- No flexibility & control
- No peak rate considerations
- No hourly temporal profiles

## ERTAC Model

- Maximum flexibility & control
- Low cost
- Peak hours represented & temporal profiles provided
- CAMD units only
- EPA has not provided full approval as of yet
- Results need post processing
- Input files need considerable maintenance by state staff

# Outstanding Issues

- Open source code: How to keep the coding up to date?
- Input file upkeep for variables, growth rates, unit and control/emissions information
- Developing and maintaining good user guide and design document
- Processes for comment/input into data files by industry/public?
- User training
- Future improvements: funding and resources

# Questions on Product Overview?