Overview of DOE EnPI Tool and Demonstration

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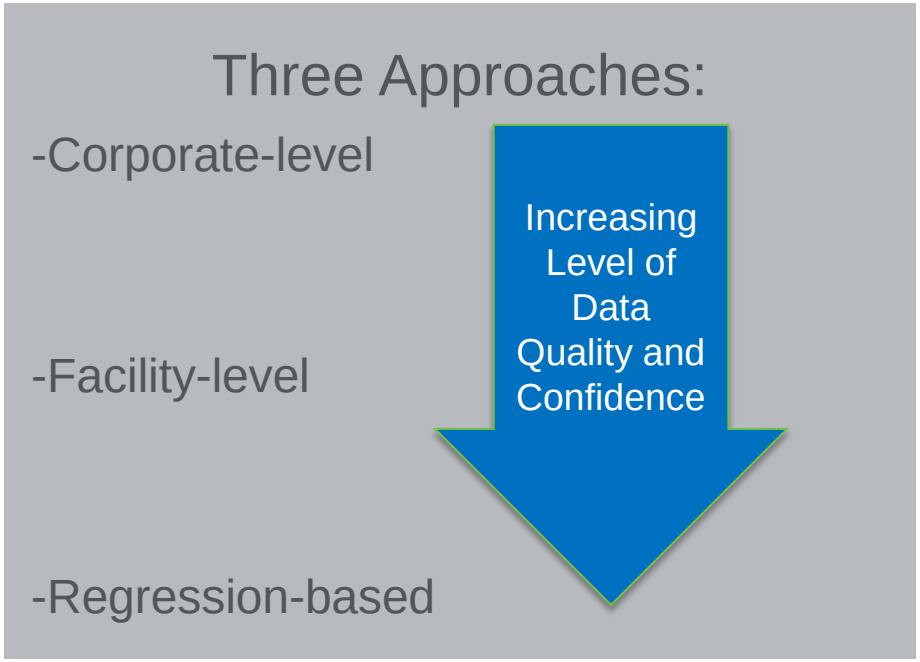
Developing a Baseline and Tracking Energy Performance

- **Draw boundary to include all appropriate operations**
  - Manufacturing buildings
  - Utilities
  - Office or Admin buildings
  - If under 5% can be deemed insignificant, and left out
- **Choose baseline year**
  - Usually year of joining or year prior
  - Can be up to three years prior to joining
- **Include all relevant energy sources**
  - Electricity (purchased, renewable, etc.)
  - Natural Gas
  - Propane, etc.
- **Time period for data**
  - Annual reports, based on monthly data
  - Other options, such as weekly or daily data

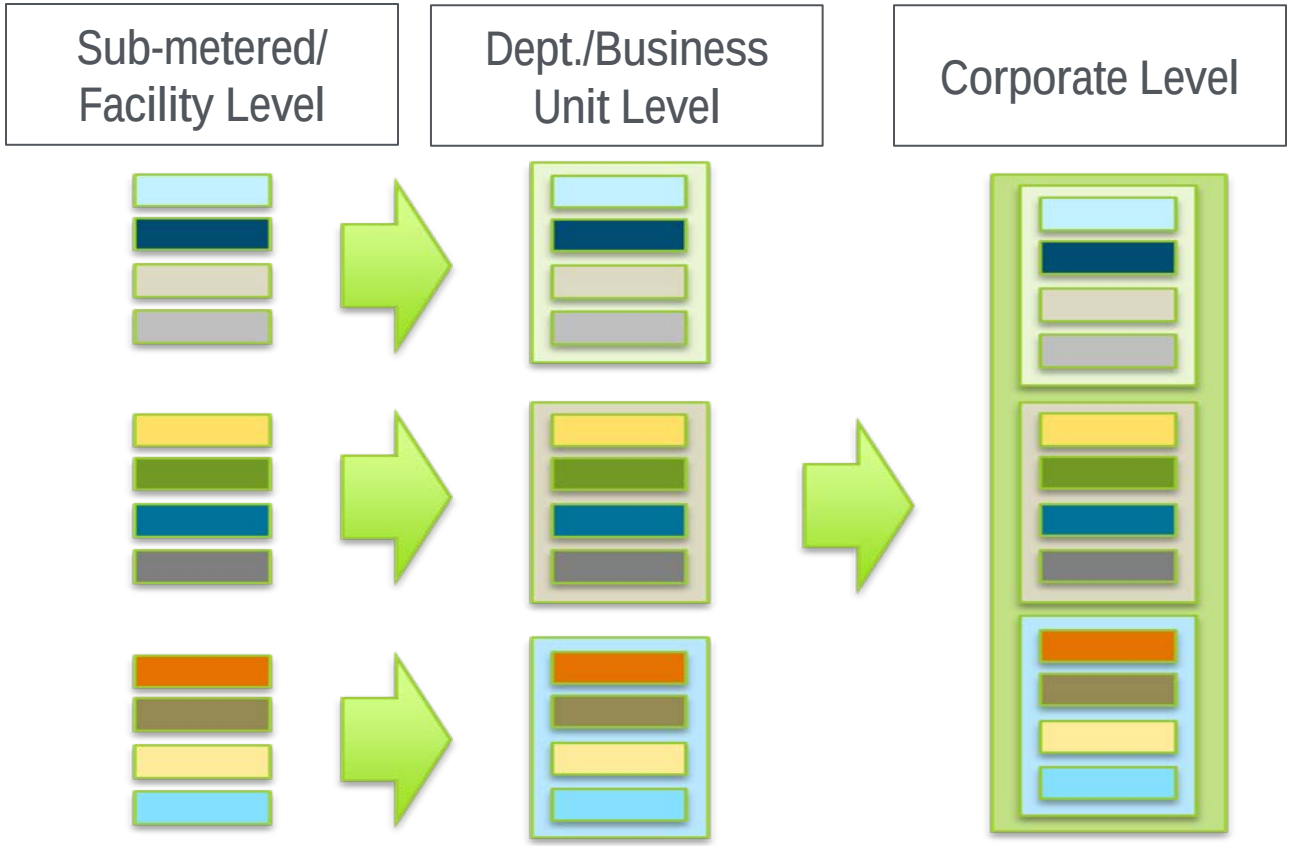


For More Info -

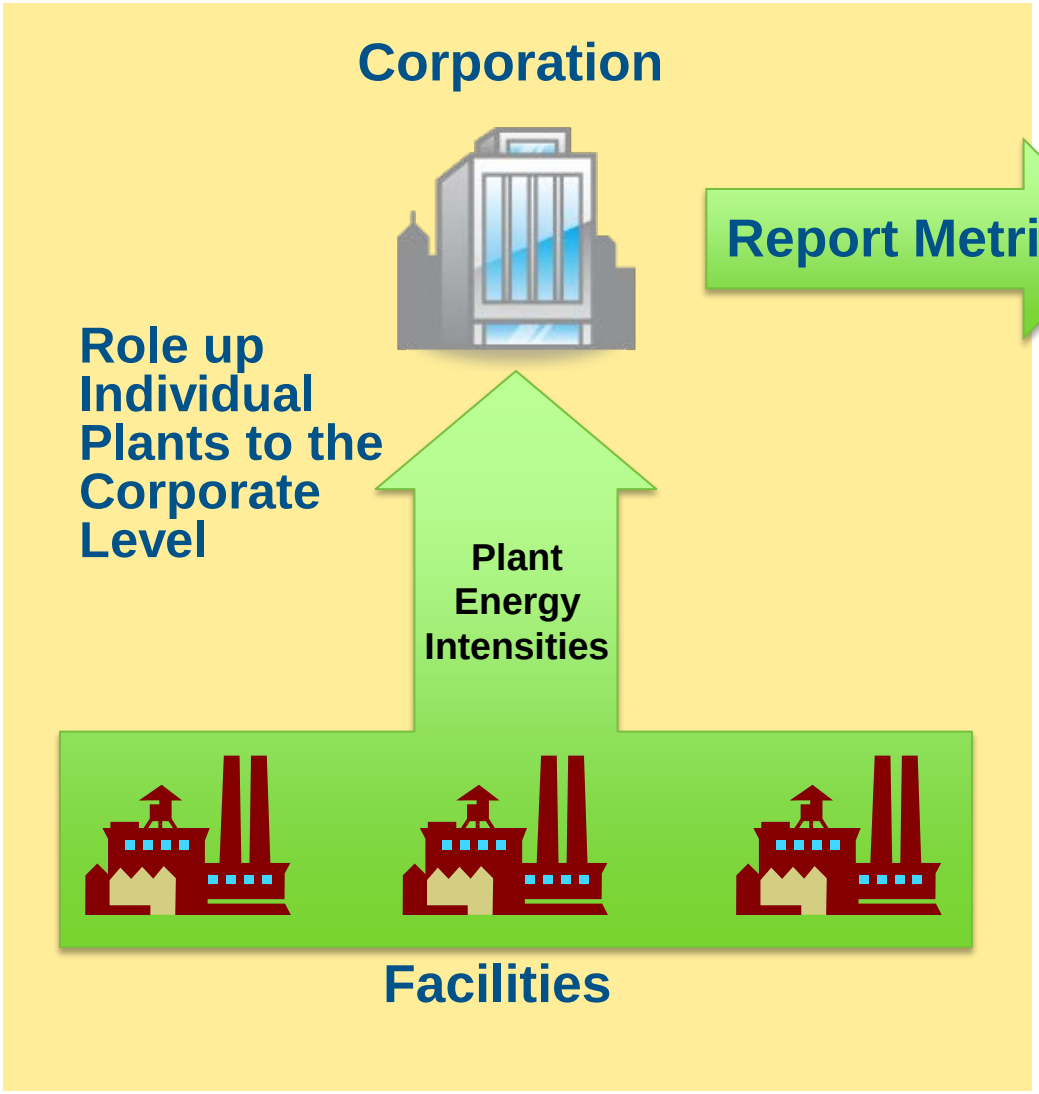
Better Plants – Energy Intensity Baselining and Tracking Guidance

Various Levels of Insight

- Create separate analysis for department, facility, or corporate managers to benchmark their processes/facilities.
- Roll up data to different levels (Facility, Business Unit, Corporate)



Multiple Data Levels



- Corporate Management Reports
- Company Sustainability Reports
- Better Plants Report
- SEP Report

Benefits of Regression Analysis

- More accurate, “apples-to-apples” comparisons, holding critical variables constant over time, such as:
  - Weather, e.g. HDDs, CDDs, rain humidity, etc.
  - Production, e.g. product output, moisture content, raw materials, etc.
- Determine the “True Energy Savings” that occur from energy project implementation
- Tool supports validation of company’s energy management activities
- Supports energy manager’s efforts to report energy intensity impacts
- Improves comparative analyses for companies that benchmark
- Regression analyses help predict future energy needs (utility procurement)

Comparison of Facility and Regression-based Approaches

	Regression-based Approach	Facility-level Approach
1	Define the boundary	Define the boundary
2	Choose a baseline year	Choose a baseline year
3	Determine relevant variables affecting energy consumption at each facility	Decide on the energy intensity denominator for each facility, usually units of output
4	Gather data on energy consumption and relevant variables for each facility	Gather data on energy consumption and units of output for each facility
5	Use regression analysis to normalize each facility's data	Calculate energy intensity for the baseline year and the current year for each facility
6	Calculate the change in energy intensity from the baseline year for each facility	Calculate the change in energy intensity from the baseline year for each facility
7	Aggregate the data on energy intensity change from each facility to the corporate level	Aggregate the data on energy intensity change from each facility to the corporate level
8	Calculate total and new energy savings	Calculate total and new energy savings

Source: U. S. Department of Energy, Energy Intensity Baselining and Tracking Guidance, January 2015.

EnPI V5.0

Purpose

- To assist organizations in calculating energy performance indicators while normalizing for variables such as weather, production, moisture content, etc.
- An additional use of the tool is to evaluate the strength of relationship of certain independent variables to energy consumption
- Automates a manual process

Intended Users

- Better Buildings, Better Plants participants
- Superior Energy Performance participants
- Any organization seeking to create and track facility energy performance over time.

Weather Data Sources

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Heating degree days (HDD) and Cooling degree days (CDD) Data

HDD and CDD data can be downloaded from the following websites:

- National Oceanic and Atmospheric Administration
- Weather Data Depot

Precipitation or Monthly Rain Data

- Weather Underground
- Weather Source (some data is free)

Thank you!

EnPI 5.0 Tool
https://www.energy.gov/eere/amo/articles/energy-performance-indicator-tool
Better Buildings, Better Plants:
https://energy.gov/eere/amo/better-plants
Better Buildings Challenge:
https://betterbuildingssolutioncenter.energy.gov/challenge

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