National Energy Savings Analysis and Net Present Value

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Purpose

- National energy savings (NES) analysis will estimate the total energy savings for the U.S. by comparing two scenarios:
  - *Base case*. Expected electricity consumption absent new standards for transformers.
  - *Standards case*. Expected electricity consumption given candidate standards levels for transformers.
- Energy savings will be estimated for several alternative candidate standards levels.

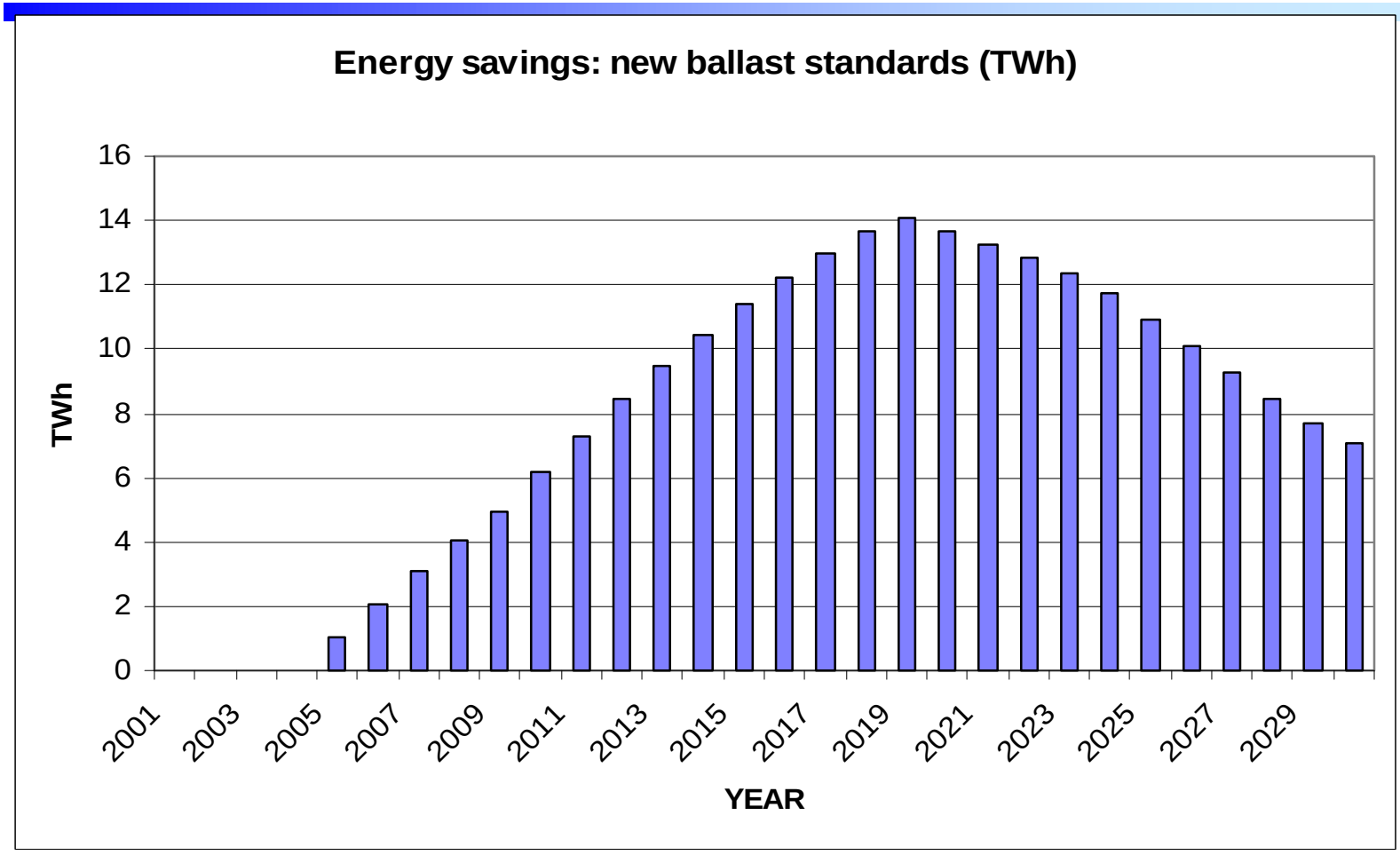
Key Inputs:
National Energy Savings

- Time period from start date of standards to a fixed future date (e.g., 2006-2050)
- Annual number of transformers purchased
  - Probability of retirement as transformers age
- Annual energy consumption
  - by class (e.g., low and medium voltage)

Method:
National Energy Savings

- Calculate annual energy consumption by transformers, base case and standards cases
- Define energy savings as difference from base case
- Calculate annual and cumulative energy savings

EXAMPLE OUTPUT:
National Energy Savings



Cumulative savings (2005-2030): 238 Twh

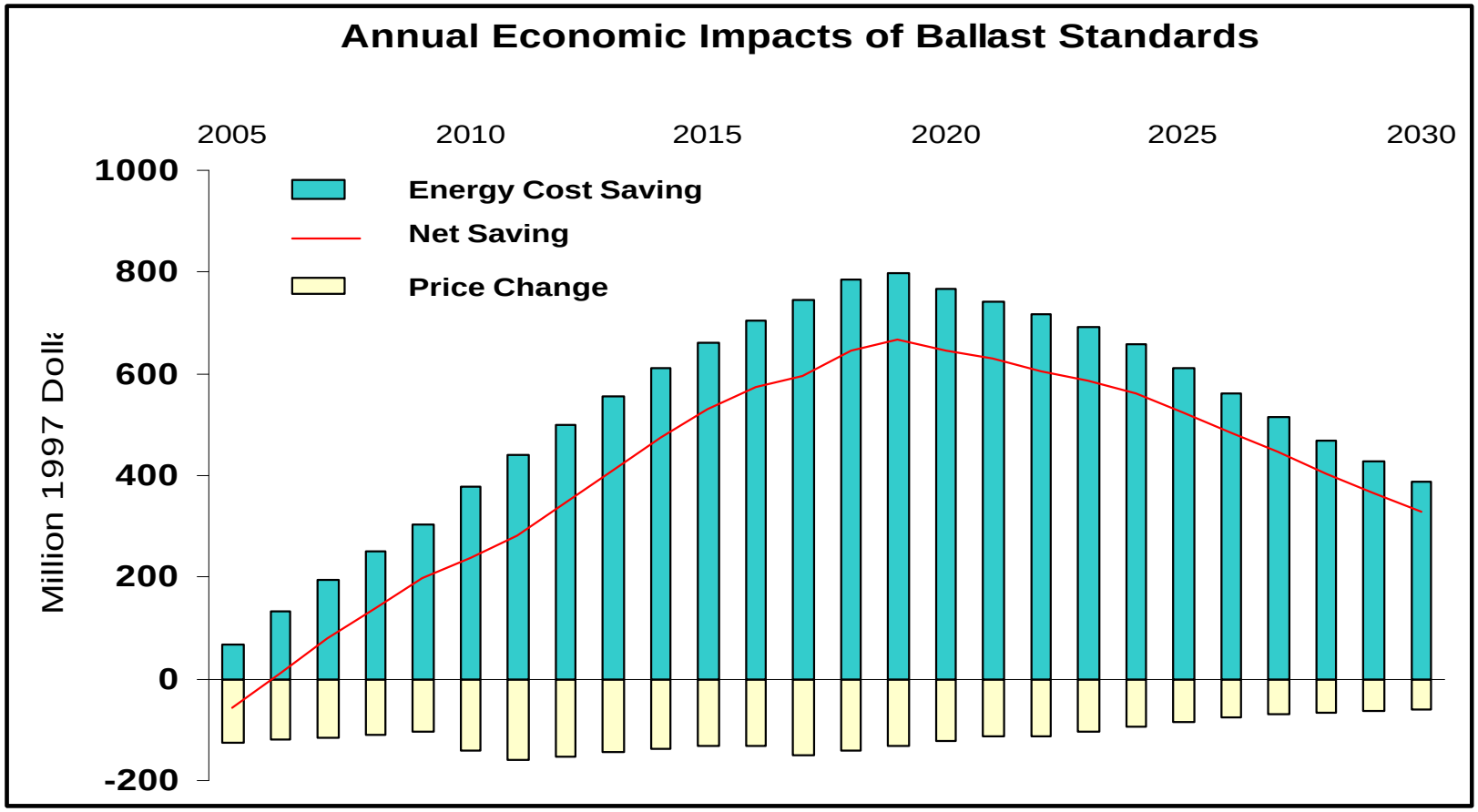
Key Inputs:
Net Present Value

- National energy savings analysis
- Operating expenses
  - including electricity prices
- Installed owner cost of transformers

Method:
Net Present Value (NPV)

- Calculate annual installed owner costs and operating costs
- Calculate annual net costs or benefits for standards compared to base case
- NPV = discounted sum of annual net costs or benefits over lifetime of transformers purchased by end date

EXAMPLE OUTPUT:
Net Present Value



NET PRESENT VALUE: **$ 2.6 billion** = Benefit ($3.5 b) - Cost ($0.9 b)
(1997$ at 7%)

Results:
NES and NPV

- National electricity savings (NES):
  - = Electricity (at base case efficiency)
  - – Electricity (at efficiency level above base case)
- Net present value (NPV) > 0 indicates net economic savings. NPV <0 indicates net costs.
- Analyze several alternative candidate standards levels.

Corrected 11/02/00