

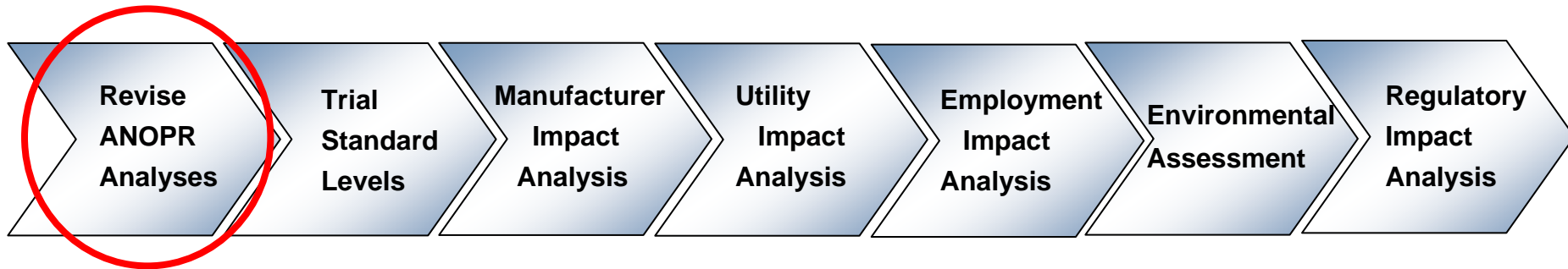
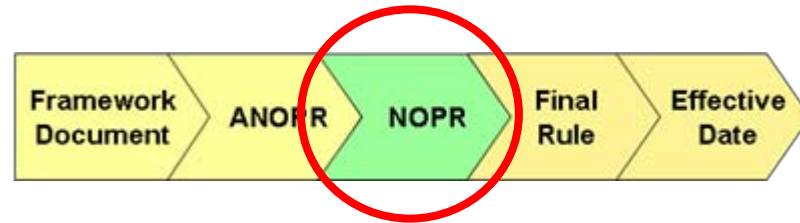


U.S. Department of Energy  
Energy Efficiency and Renewable Energy

# Notice of Proposed Rulemaking (NOPR) Analyses and Next Steps



# NOPR Analyses Flow Diagram





## Revise ANOPR Analyses

<b>ANOPR Analysis</b>	<b>Action</b>
<b>Engineering Analysis</b>	<ul style="list-style-type: none"><li>• Consider ANOPR comments</li><li>• Revise using latest data</li></ul>
<b>Life-Cycle Cost and Payback Period Analyses</b>	<ul style="list-style-type: none"><li>• Consider ANOPR comments</li><li>• Revise using latest data</li><li>• Conduct LCC sub-group analysis</li></ul>
<b>National Impacts Analysis</b>	<ul style="list-style-type: none"><li>• Consider ANOPR comments</li><li>• Revise using latest data</li></ul>



## **Selection of Candidate Standard Levels for NOPR Analyses (Issue #7)**

- **The ANOPR identified the baseline level (Level 1) and seven proposed efficiency levels (Level 2 through 8) from which DOE selects candidate standard levels (CSLs).**
- **DOE selected CSLs for each equipment class (Class A & Class B) for NOPR analysis.**
- **DOE has identified CSLs plus the baseline level (Level 1) for each equipment class based on efficiency levels analyzed showing:**
  - Maximum energy savings.
  - Maximum LCC savings.
  - Maximum efficiency level showing positive LCC savings.
  - Highest efficiency level with a payback period of three years or less.



## Selection of Candidate Standard Levels for NOPR Analyses (Issue #7)

- Candidate standard levels and factors considered in their selection for future analysis

Equipment Class	Candidate Standard Level Selection Considerations					
	Maximum Efficiency Level	Maximum Efficiency Level with Positive LCC Savings	Efficiency Level with Minimum LCC	Highest Efficiency Level with PBP <3 Years	Additional Candidate Standard Level Selected for Future Analysis	
Class A	Level 8	Level 7	Level 5	Level 6	Level 4	Level 3
Class B	Level 8	Level 7	Level 4	Level 4	Level 5	Level 3



## Selection of Candidate Standard Levels for NOPR Analyses (Issue #7)

- Candidate standard levels for analyzed equipment classes expressed in terms of the refrigerated volume

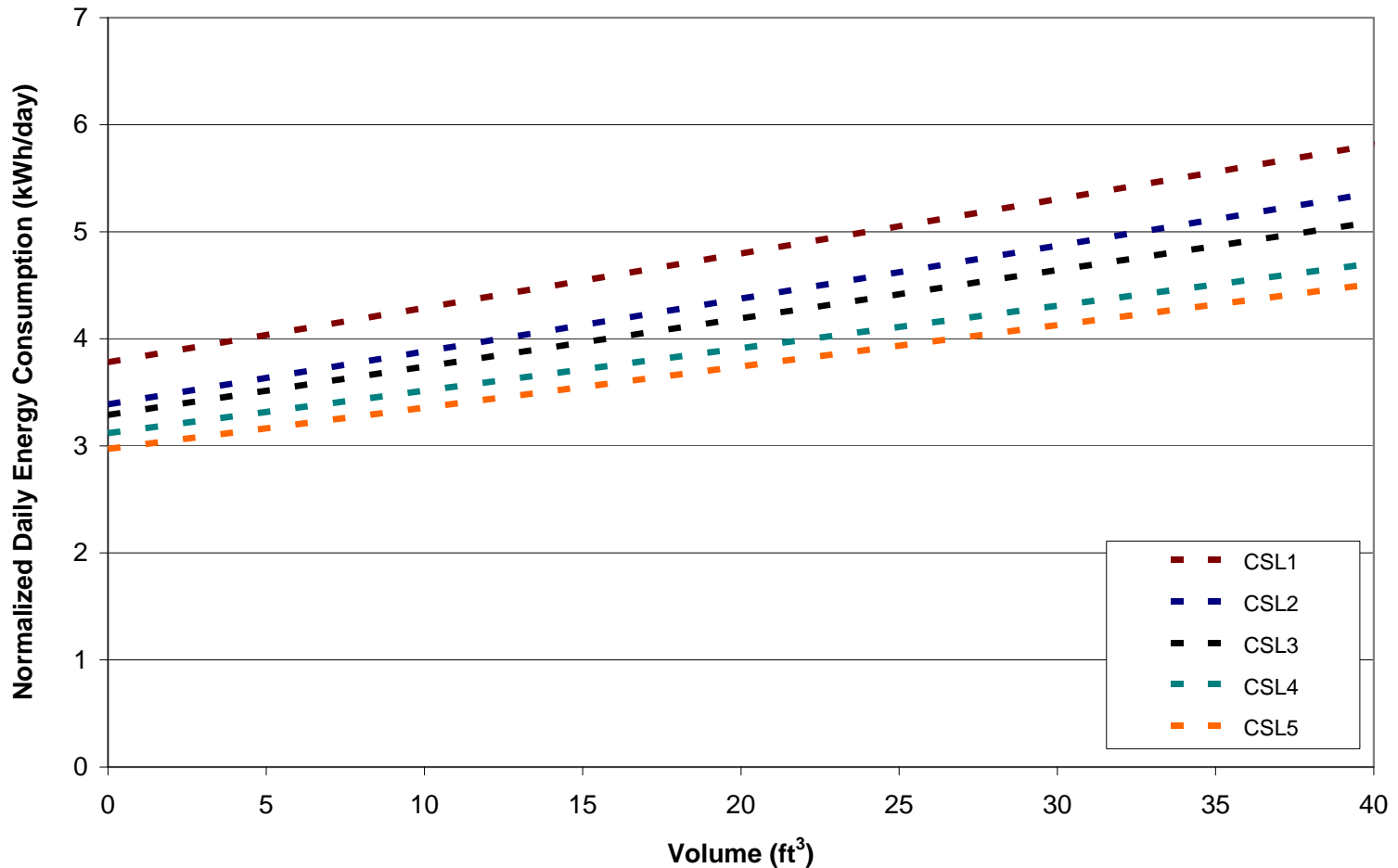
Equipment Class	Test Metric	Candidate Standard Level in Order of Efficiency Expressed in Terms of the Test Metric					
		Baseline	CSL1	CSL2	CSL3	CSL4	CSL 5
Class A	Daily Energy Consumption kWh/day	B = 0.0550 K = 4.74 (Level 1)	B = 0.0508 K = 3.78 (Level 3)	B = 0.0494 K = 3.39 (Level 4)	B = 0.0451 K = 3.29 (Level 5)	B = 0.0397 K = 3.12 (Level 7)	B = 0.0386 K = 2.97 (Level 8)
Class B	Daily Energy Consumption kWh/day	B = 0.0771 K = 4.08 (Level 1)	B = 0.0680 K = 2.94 (Level 3)	B = 0.0554 K = 2.90 (Level 4)	B = 0.0833 K = 2.00 (Level 5)	B = 0.0479 K = 2.37 (Level 7)	B = 0.0471 K = 2.33 (Level 8)

***DOE invites comments on the candidate standard levels selected for NOPR analysis.***



# Selection of Candidate Standard Levels for NOPR Analyses (Issue #7)

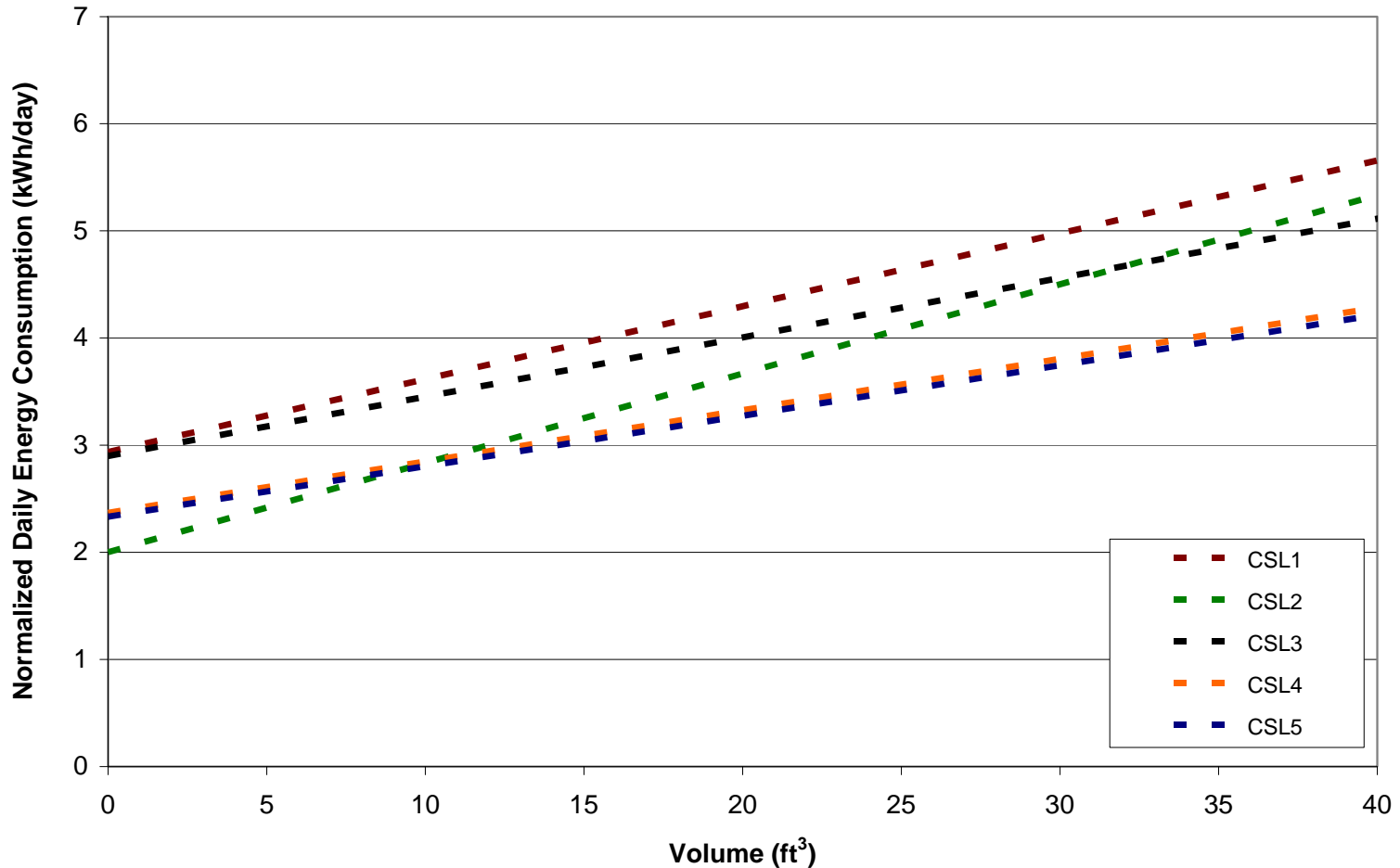
Class A BVM Candidate Standard Levels





# Selection of Candidate Standard Levels for NOPR Analyses (Issue #7)

Class B BVM Candidate Standard Levels





## Approach to Characterizing Energy Conservation Standards (Issue #8)

- Standards will be based on the daily energy consumption (DEC) as calculated by the test procedure.
- DOE plans to define energy conservation standards for refrigerated beverage vending machines in terms of:

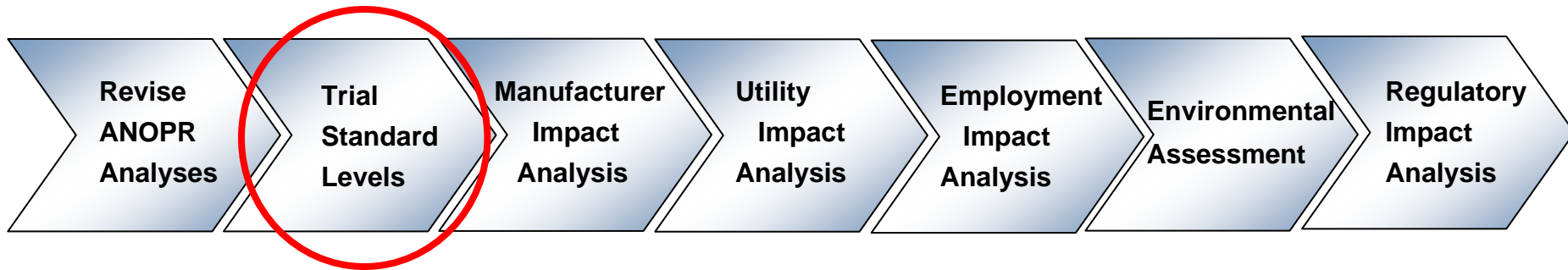
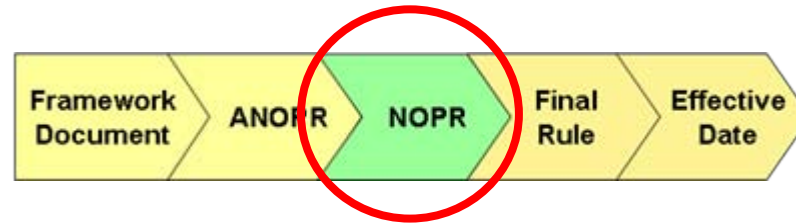
**Maximum daily energy consumption  $M$  (kWh/day) =  $(B \times V) + K$**

- $B$  is expressed in terms of kWh/day/ft<sup>3</sup> of refrigerated volume,
- $V$  is the refrigerated volume (ft<sup>3</sup>) calculated for the equipment class, and
- $K$  is an offset factor expressed in kWh/day.

***DOE invites comments on this proposed approach and comments on how it could develop appropriate offset factors ( $K$ ) for the two equipment classes.***



# NOPR Analyses Flow Diagram





## Selection of Trial Standard Levels

### ■ Purpose

- To develop a list of trial standard levels from which impacts (benefits and burdens) are weighed and a proposed standard level is selected.
  - Each trial standard level consists of a set of distinct potential minimum efficiency levels covering all equipment classes which may vary between equipment classes
  - NOPR analyses assess impacts for trial standard levels.

### ■ Method

- Trial standard levels are assembled for the equipment classes identified in the ANOPR.
  - Trial standard levels cover a range of efficiencies and can include:
    - Most energy efficient level (max tech).
    - Efficiency level with the lowest life-cycle cost.
    - Efficiency level with a payback period of three years or less.
    - Efficiency levels with noteworthy technologies.
    - Efficiency levels that fill in large gaps between candidate standard levels.
  - Each trial standard level consists of the candidate standard level for each equipment class that meets one of the above criteria.



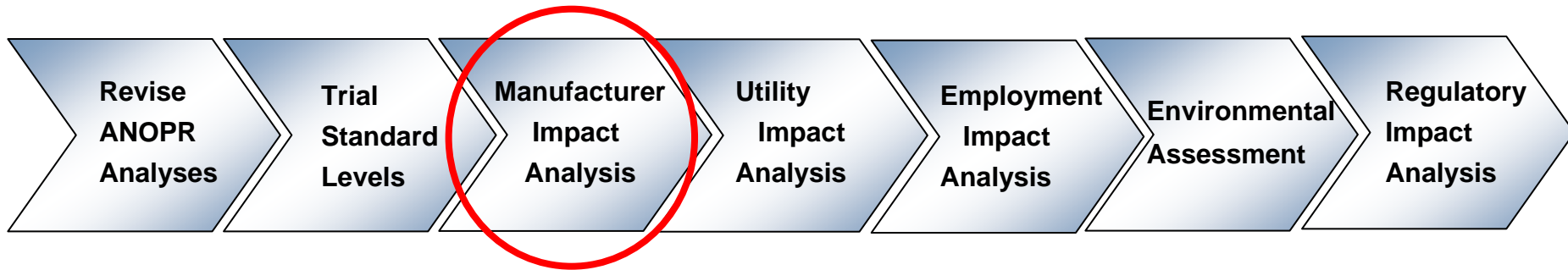
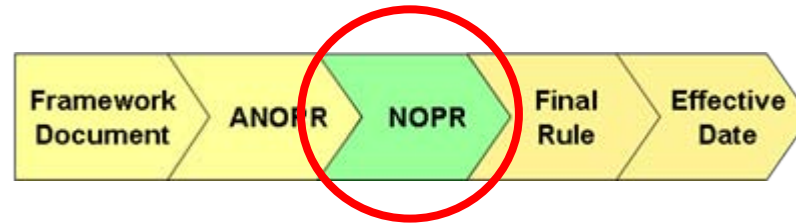
## Trial Standard Level Criteria

- Trial standard levels are created from combinations of candidate standard levels for each equipment class.
- Trial standard levels are based around a consistent theme, such as lowest life-cycle cost or payback period of three years or less.

*DOE invites comments on the criteria for selecting trial standard levels.*



## NOPR Analyses Flow Diagram





## Manufacturer Impact Analysis

### ■ Purpose

- Assess the impacts of standards on beverage vending machines manufacturers.
- Identify and estimate impacts on manufacturer sub-groups that may be more severely impacted than the industry as a whole.
- Examine the impact of cumulative regulatory burdens on the industry.

### ■ Method

- Analyze industry cash flow and net present value through use of the Government Regulatory Impact Model (GRIM).
- Interview manufacturers to refine inputs to the GRIM, develop sub-group analyses, and address qualitative issues.

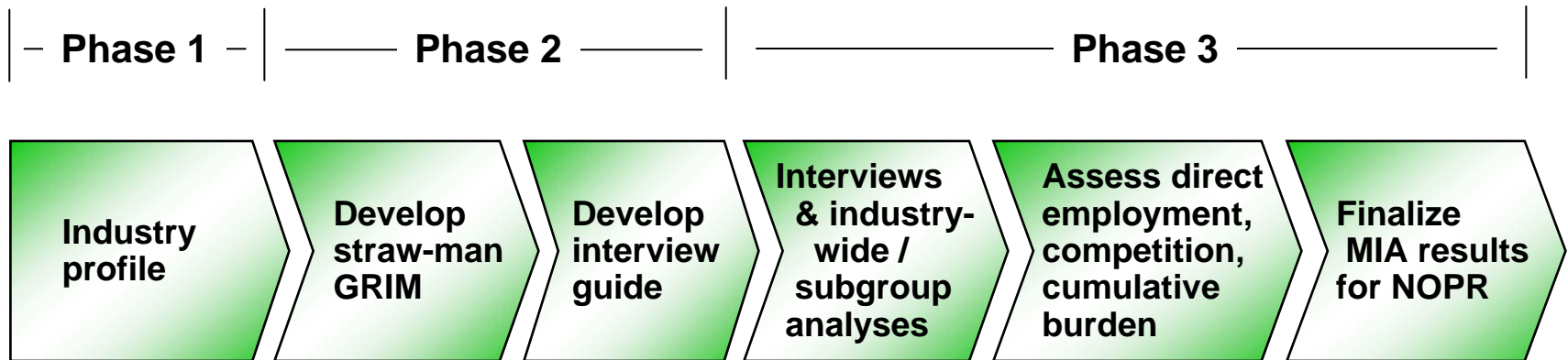
### ■ Output

- Manufacturer sub-group net present value impacts.
- Other sub-group net present value impacts.
- Other impacts.



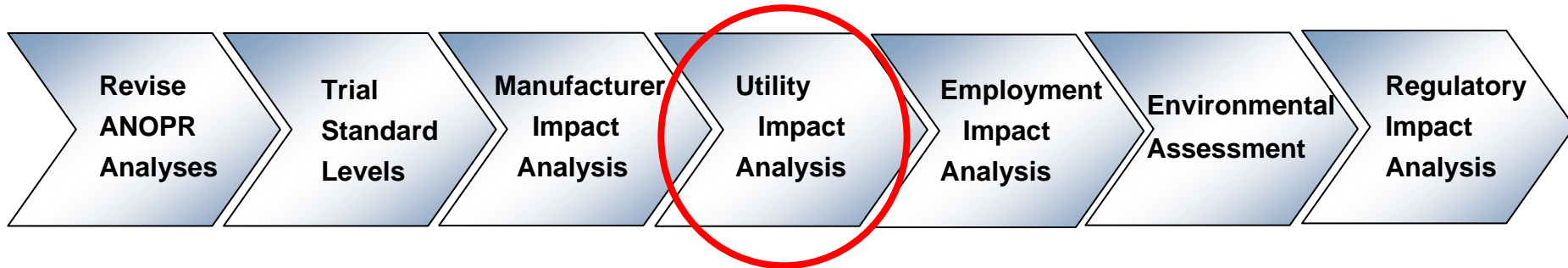
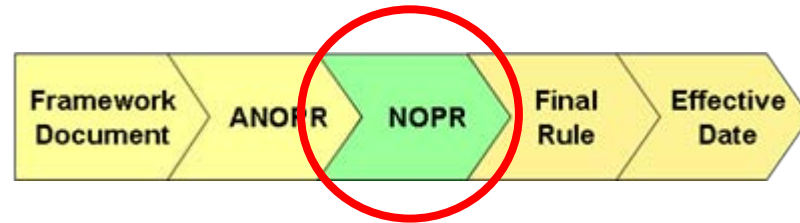
## Manufacturer Impact Analysis (MIA) Process

- The MIA process consists of three phases:





# NOPR Analyses Flow Diagram





## Utility Impact Analysis

### ■ Purpose

- Investigate the effects on electric utilities from reduced energy consumption and reduced peak load demand due to new energy conservation standards.

### ■ Method

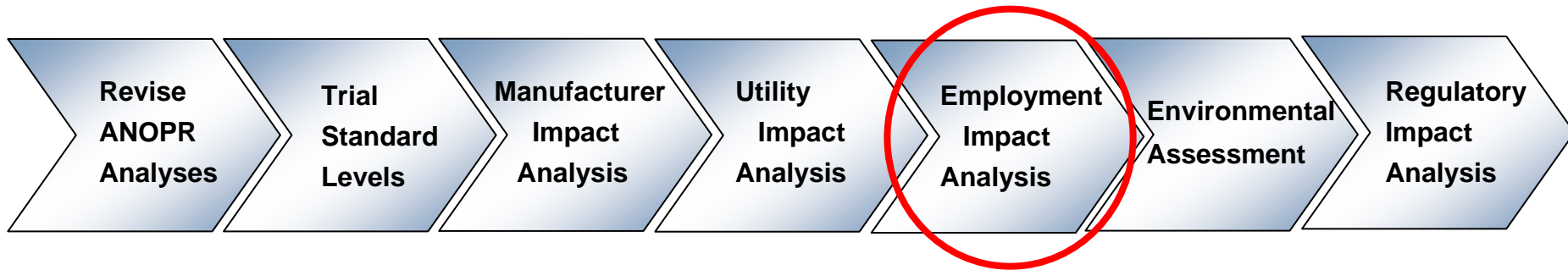
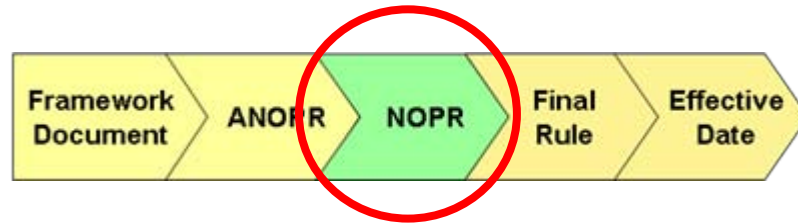
- Uses national energy savings results.
- Uses the Energy Information Administration's National Energy Modeling System (NEMS) tailored for DOE's Building Technologies Program (NEMS-BT).

### ■ Output

- Change in electricity sales and price by region.
- Change in the mix of electricity generation.
- Change in new capacity construction.



## NOPR Analyses Flow Diagram





# Employment Impact Analysis

## ■ Purpose

- Report net jobs created or eliminated nationally as a consequence of new energy conservation standards.

## ■ Method

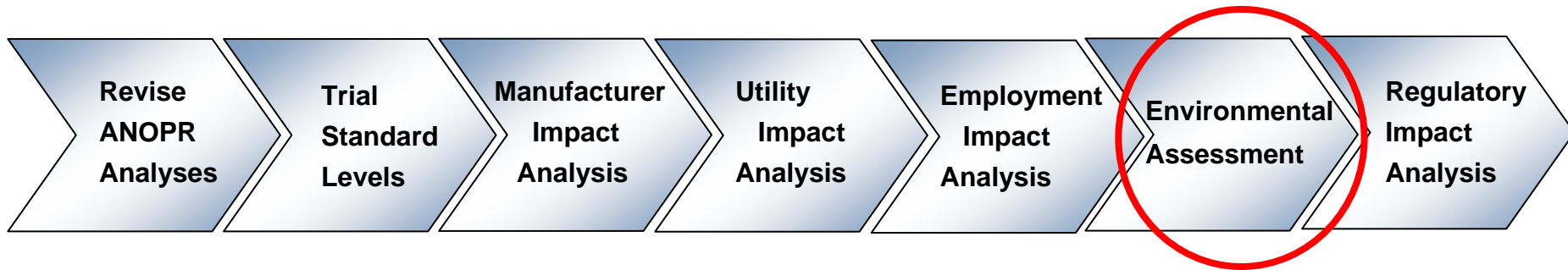
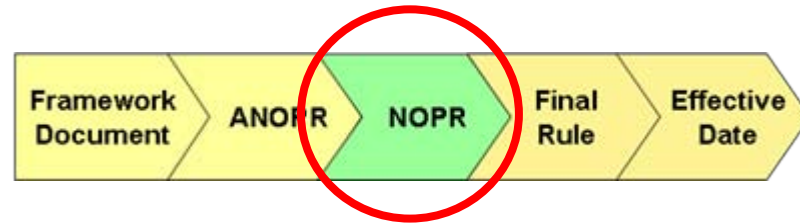
- Uses the ImSET (Impact of Sector Energy Technologies) model for the evaluation of indirect employment impacts.
- Changes in equipment and energy expenditures are developed in the National Energy Savings Analysis.
- Direct employment impacts are developed in the Manufacturer Impact Analysis.

## ■ Output

- Change in the commercial and energy sector employment as a consequence of new energy conservation standards.



# NOPR Analyses Flow Diagram





## Environmental Assessment

### ■ Purpose

- Report environmental impacts as a consequence of new energy conservation standards, including changes in power plant emissions.

### ■ Method

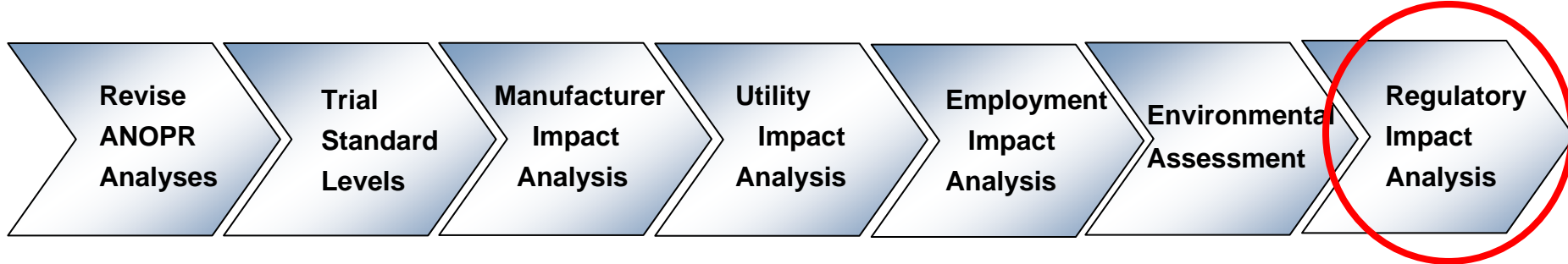
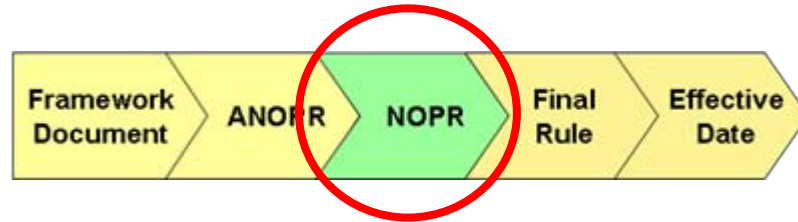
- Energy savings results taken from the National Energy Savings Analysis.
- Energy Information Administration's National Energy Modeling System (NEMS) provides power-plant emissions.

### ■ Output

- Estimate of national emission reductions of sulfur dioxide (SO<sub>2</sub>), oxides of nitrogen (NO<sub>x</sub>), carbon dioxide (CO<sub>2</sub>) and mercury (Hg).



# NOPR Analyses Flow Diagram





## Regulatory Impact Analysis

### ■ Purpose

- Investigate the national impacts due of non—regulatory alternatives compared with mandatory energy conservation standards.
- The non-regulatory alternatives that may be considered include:
  - No new regulatory action; early replacement; prescriptive standards; customer tax credits; manufacturer tax credits; customer rebates; voluntary efficiency targets; bulk government procurement.

### ■ Method

- NES spreadsheet model is modified to consider scenarios. These include: energy prices and escalation factors; implicit market discount rates; customer purchase price, operating cost, and income elasticities; and equipment stock data.

### ■ Output

- National Energy Savings and Net Present Value of the non-regulatory alternatives.
- Impact of non-regulatory alternatives on purchase price and use of energy-efficient equipment.



## Consensus Recommendations

- **DOE seeks to encourage development of consensus proposals for new standards because standards with such broad-based support are likely to balance effectively the economic, energy, and environmental interests affected by standards.**
- **Any recommendation must satisfy the seven statutory criteria provided by EPCA for determining whether an energy conservation standard is technologically feasible and economically justified, and will result in significant energy savings.**
- **Any consensus recommendation should also include information that DOE can use to assess the seven statutory criteria that determine whether the benefits of the standard exceed its burdens to the greatest extent practicable.**



## The Energy Policy and Conservation Act (EPCA) directs DOE to consider seven factors when setting energy conservation standards

<b>Factor</b>	<b>Analysis</b>
<b>1. Economic impact on consumers and manufacturers</b>	<b>Life-cycle cost analysis Manufacturer impacts analysis</b>
<b>2. Lifetime operating cost savings</b>	<b>Life-cycle cost analysis</b>
<b>3. Total projected energy savings</b>	<b>National impact analysis</b>
<b>4. Impact on utility or performance</b>	<b>Screening analysis Engineering analysis</b>
<b>5. Impact of any lessening of competition</b>	<b>Manufacturer impacts analysis</b>
<b>6. Need for national energy conservation</b>	<b>National impact analysis</b>
<b>7. Other factors the Secretary considers relevant</b>	<b>Environmental assessment Utility impact analysis Employment impact analysis</b>



## How to Submit Comments

- **Public Meeting** – oral comments will be captured in the transcript and become part of the public record.
- **Written comments** – ANOPR comment period is open until July 16, 2008. Reference Docket #EERE-2006-STD-1025 and/or RIN 1904-AB58

Email: [beveragevending.rulemaking@ee.doe.gov](mailto:beveragevending.rulemaking@ee.doe.gov) Include EERE-2006-STD-1025 and/or RIN 1904-AB58 in the subject line of your message.

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