

# Time-sensitive valuation of energy efficiency (TSV-EE): Stakeholder feedback on BTO analysis priorities

Despite the fact that the vast majority of consumers pay a constant rate for electricity, the system-level cost and impacts of delivered electricity can vary significantly in both time and space depending on the local generation fuel mix, and the amount of generation and delivery infrastructure required to meet peak power demand. By extension, the value from energy efficiency savings in buildings vary depending on when energy is saved. In this form, we refer to this as the "Time-Sensitive Valuation of Energy Efficiency" (TSV-EE). For further reading, refer to the recent LBNL report on this topic, <https://emp.lbl.gov/publications/time-varying-value-electric-energy/>, which details the avoided grid-level energy and capacity costs from energy efficiency measures in different regions of the United States.

The US Department of Energy's Building Technologies Office (BTO) is currently looking at how we present information on TSV-EE in our building energy modeling software (i.e. EnergyPlus) as well as other top down tools (e.g. Scout). We would like to present information on the time-varying value of energy and the associated changing value of energy efficiency in a way that is useful for different decision-makers who might be using our tools. The purpose of this form is to gather input from key stakeholders who either are directly involved in the electricity market or building industry as well as those have expert knowledge on TSV-EE.

Throughout this form, we have provided spaces for additional comments beyond the multiple choice questions. We encourage you to provide additional comments.

All information provided through this form will be confidential and will remain internal to BTO. We estimate that this survey will take approximately 20 minutes of your time. Participation in this exercise is voluntary. The OMB control number for this exercise is: 1910-5160

\* Required

1. **Email address \***

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2. **Do you have experience or familiarity with time-sensitive evaluation of building energy efficiency measures? \***

Mark only one oval.

- Yes *After the last question in this section, start this form over.*
- No
- Unsure *After the last question in this section, start this form over.*

3. **In your opinion, how useful is DOE's time-sensitive valuation of building energy efficiency measures for building retrofit / operational decision-making in terms of energy use, greenhouse gas emissions, and/or operating cost? \***

Mark only one oval.

	1	2	3	4	5	
Not at all useful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very useful

**4. Would including TSV-EE in DOE analytic tools change building retrofit and/or operational than EE analysis alone? \***

*Mark only one oval.*

- Yes
- No
- Unsure

**5. Comments on EE vs. TSV-EE in DOE analytical tools**

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**6. Which of the below stakeholders would utilize results from time-sensitive valuation of building energy efficiency measures in their decision-making? \***

*Check all that apply.*

- Utilities
- Building owners
- Building occupants
- Power generators
- Independent system operators
- Architects
- Local governments
- State governments
- Federal government
- Researchers
- Technology developer
- Other: \_\_\_\_\_

**7. Comments on TSV-EE and decision-making**

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**Metrics for DOE Tools**

**8. What metrics should BTO include in their analysis tools to support the time valuation of energy efficiency? \***

*Check all that apply.*

- Avoided energy use
- Avoided energy costs
- Avoided greenhouse gas emissions
- Avoided greenhouse gas emission costs
- Avoided power generation capacity costs
- Avoided power transmission and distribution costs
- Avoided risk mitigation costs
- Avoided ancillary services
- Grid variability reduction (how much an EE measure reduces variability in the grid)
- Grid interaction indicators (how much exchange of energy there is between the building and the grid. Common for zero energy buildings)
- Other: \_\_\_\_\_

**9. What is the minimum time resolution at which the above metrics should be characterized for assessing the time value of energy efficiency? \***

*Mark only one oval.*

- Annually
- Seasonally
- Monthly
- Daily
- Hourly
- Sub-hourly
- Other: \_\_\_\_\_

**10. What is the least resolute geographical area of the above metrics required to meaningfully assess the time value of energy efficiency in a way that is useful for decision-making? \***

*Check all that apply.*

- National
- NERC region
- Utility region
- State
- City/town
- Distribution feeder
- Other: \_\_\_\_\_

**11. Are sufficient data available to support implementation of these temporal/spatial resolutions in analysis tools that DOE might support? \***

*Mark only one oval.*

- Yes
- No
- Unsure

**12. Comments on spatial and temporal resolution of TSV-EE measure analysis and available data**

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**13. Is it useful to further distinguish certain TSV-EE metrics in DOE analytic tools in terms of "peak" or "off-peak" periods of energy demand? \***

*Mark only one oval.*

- Yes      *Skip to question 13.*
- No      *Skip to question 16.*
- Maybe      *Skip to question 13.*

## Usefulness of "Peak"/"Off-Peak"

**14. Which metrics are most important to report in terms of "peak" and "off-peak" demand periods?**

*Check all that apply.*

- Avoided energy use
- Avoided energy costs
- Avoided carbon dioxide emissions
- Avoided carbon dioxide emission costs
- Other: \_\_\_\_\_

**15. How should a "peak" period of energy demand be defined in order to be useful for analysis tools?**

*Mark only one oval.*

- Consistent time of day (e.g. 2 PM - 6 PM)
- Local utility billing definition
- Fraction of energy production to total system production capacity
- Generation mix emission intensity (GHG or other pollutants)
- Other: \_\_\_\_\_

**16. Comments on the usefulness of "peak"/"off-peak" demand periods in DOE analysis tools**

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**Data for TSV-EE**

**17. Prioritize the additional or updated data resources by most essential (rank 1) to least essential (rank 5). \***

*Mark only one oval per row.*

	Rank 1 (Most Essential)	Rank 2	Rank 3	Rank 4	Rank 5 (Least Essential)
Characterizing utility-specific time-sensitive rate structures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Characterizing energy load shapes for a given building type and/or geographical region	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Characterizing utility-level benefits of time-sensitive EE (e.g., avoided generation, transmission, distribution costs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Characterizing non-energy benefits of time-sensitive EE (e.g., avoided carbon emissions/costs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Characterizing energy savings shapes for particular efficiency measures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**18. Please list currently available data resources that you find useful in supporting time sensitive valuation of energy efficiency**

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**19. Comments on data availability, quality, and key gaps**

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# TSV-EE for non-electric fuels

20. How important is it to add TSV-EE for non-electric fuels (e.g. natural gas, piped gas, propane) into DOE analytic tools? \*

Mark only one oval.

1      2      3      4      5

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Not at all important                  Very important

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21. Should DOE provide TSV-EE metrics for non-electric fuels in our tools? \*

Mark only one oval.

Yes

No

22. What time-sensitive valuation issues might be unique to these other fuels compared to electricity?

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23. Comments on non-electricity TSV-EE

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## Contact Information

24. First Name \*

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25. Last Name \*

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26. Position Title \*

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27. Organization Name \*

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**28. Organization Type \***

*Mark only one oval.*

- Utility
- Industry
- Consultant
- National lab
- Advocacy group
- Federal government
- State government
- Non-profit
- University

**29. What building types are your primary focus or interest? \***

*Mark only one oval.*

- Residential
- Commercial
- Both
- Other: \_\_\_\_\_

**30. Would you like DOE BTO staff to contact you for a one-on-one conversation on TSV-EE? \***

*Mark only one oval.*

- Yes
- No

**31. If there is someone else in your organization you think we should reach out to who is familiar with this topic, please provide their name and e-mail address here**

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**32. Please provide any additional comments on TSV-EE here.**

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