



Time-Varying Rates

James Gignac

Union of Concerned Scientists

Illinois Next Grid, Working Group 7

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Science for a
and healthy planet
and safer world.

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Flipping the Switch for a Cleaner Grid (2017)

Concerned Scientists
ISSUE BRIEF

Flipping the Switch for a Cleaner Grid

Using Time-Varying Rates to Boost Renewables and Save Money

ISSUE SUMMARY

The electric grid in the United States is facing a number of challenges, including the need to meet growing demand for electricity, the need to reduce greenhouse gas emissions, and the need to improve the reliability of the system. One of the most effective ways to address these challenges is by using time-varying electricity rates. This approach allows utilities to charge more for electricity during peak demand periods and less during off-peak periods. This helps to reduce the need for expensive fossil fuel power plants, which are the most polluting and expensive source of electricity. It also helps to reduce the need for new power plants, which can be a major barrier to the deployment of renewable energy. Time-varying rates also help to reduce the need for energy storage, which is currently one of the most expensive and least reliable ways to store electricity. By using time-varying rates, utilities can help to reduce the cost of electricity and improve the reliability of the system. This is a win-win for everyone.

KEY TAKEAWAYS

- Time-varying electricity rates can help to reduce the need for expensive fossil fuel power plants, which are the most polluting and expensive source of electricity.
- Time-varying rates also help to reduce the need for new power plants, which can be a major barrier to the deployment of renewable energy.
- Time-varying rates also help to reduce the need for energy storage, which is currently one of the most expensive and least reliable ways to store electricity.
- By using time-varying rates, utilities can help to reduce the cost of electricity and improve the reliability of the system.

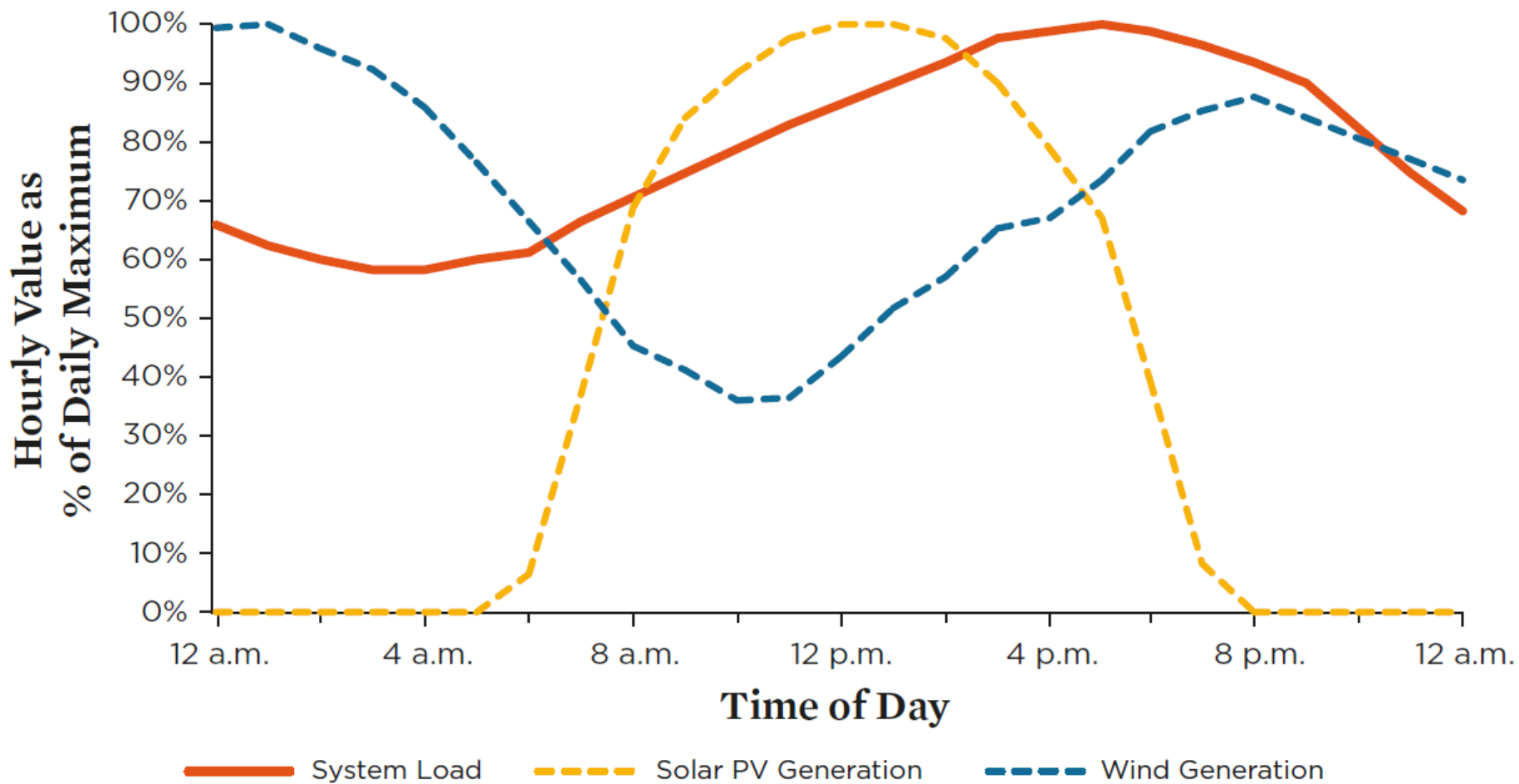
CONCLUSION

Time-varying electricity rates are a simple and effective way to address the challenges of the electric grid. By using time-varying rates, utilities can help to reduce the need for expensive fossil fuel power plants, which are the most polluting and expensive source of electricity. It also helps to reduce the need for new power plants, which can be a major barrier to the deployment of renewable energy. Time-varying rates also help to reduce the need for energy storage, which is currently one of the most expensive and least reliable ways to store electricity. By using time-varying rates, utilities can help to reduce the cost of electricity and improve the reliability of the system. This is a win-win for everyone.



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Time-varying electricity rates can boost renewables and save money.



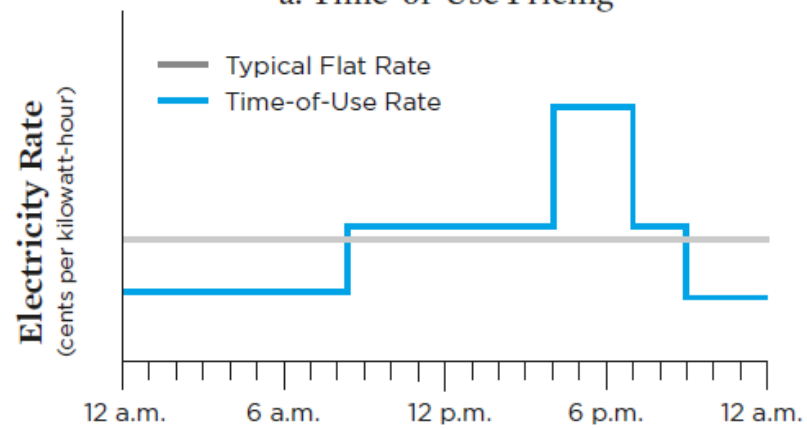
{ Taxonomy

Types of Time-Varying Rates

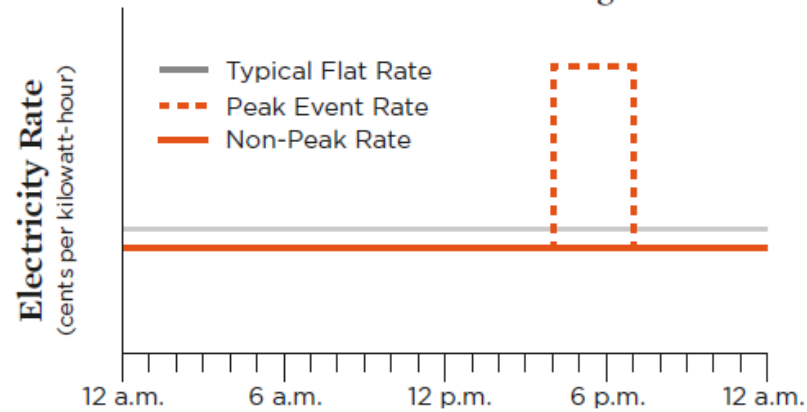
- Time of Use Rates (on peak, off peak tiers)
- Real-Time Pricing (e.g., Hourly Pricing)
- Critical Peak Pricing (Or Rebates)

(Interruptible Load (i.e., A/C Cycling) -- not a rate but way to be flexible with demand and be paid for it)

a. Time-of-Use Pricing



b. Critical Peak Pricing



c. Real-Time Pricing

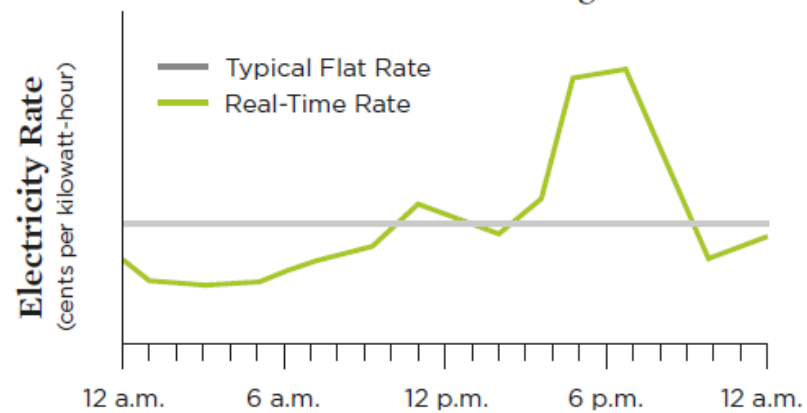
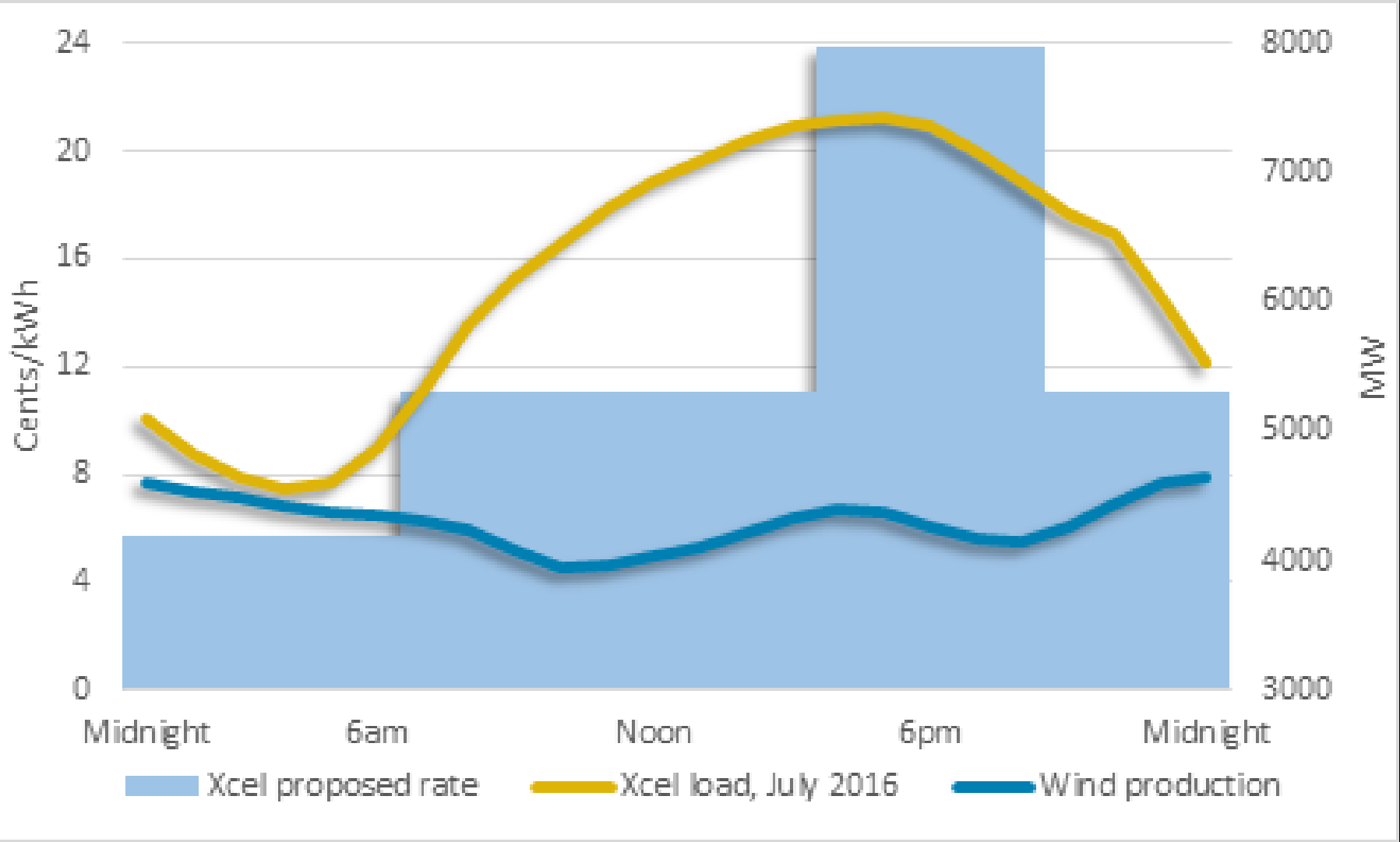


Table 5. TOU Pilot Rate Design

Proposed TOU Pilot Energy Rates				Rates - Cents per kWh		
with Standard Rate Comparison		TOU		Average	June -	October-
		Ratio		Monthly	September	May
TOU Pilot Rate						
On-Peak	3PM-8PM Weekdays	4.20		23.821	25.949	22.385
Mid-Peak	Other Hours	1.95		11.070	12.125	10.430
Off-Peak	12AM-6AM All days	1.00		5.676	5.676	5.676
Standard Flat Rate				12.386	13.437	11.742
TOU Percent Change from Standard Rate						
On-Peak	3PM-8PM Weekdays			+92%	+93%	+91%
Mid-Peak	Other Hours			-11%	-10%	-11%
Off-Peak	12AM-6AM All days			-54%	-58%	-52%
<i>Notes: 1) Rates include fuel cost, 2) On-Peak excludes designated holidays</i>						



{ Thank you

James Gignac

Union of Concerned Scientists

(773) 941-7916

jgignac@ucsusa.org