SRP Price Process Comments with Response Week ending March 1, 2025

SRP Public Price Process Responses from: 2/24/2025

Name: Jane Breakiron

Record Number: 269b4f99

Delivery Method: Digital Submission

Received Date: 2/21/2025

Comment:

Is the cost increase going to fund the green new deal polices? From what I have heard that these policies are unreliable and will increase our electric bills significantly. I am most concerned about black outs in the summer which can lead to heat related deaths. This happened to one of my family members when their AC didn't work.

Response Subject: SRP Corporate Pricing Response to Public Comment #269b4f99

Response:

Hi Jane,

Thanks for reaching out. I'm sorry to hear about the loss of your family member.

The reliability of SRP's power system is vital, especially during Arizona's hot summers. SRP maintains some of the some of the highest levels of reliability in the industry.

SRP management is proposing price changes intended to account for rising costs, ensure that SRP maintains its long-term financial health, and reflect SRP’s continued transition to sustainable resources and new technologies. The price proposal reflects, among other things, an increase in base prices to address expenses related to replacing aging infrastructure, adapting to an evolving power grid, and enhancing customer programs and services, while maintaining reliability and safety.

SRP Public Price Process Responses from: 2/25/2025

Name: William Souders

Record Number: ff8604ad

Delivery Method: Digital Submission

Received Date: 2/21/2025

Comment:

In 15 years since 2010, why hasn't SRP built enough plants to keep residential customers from paying for peak hour energy rates? Why aren't you working for residential rate payers? Is reducing the cost of electricity one of your goals? Why not? Has SRP reduced gifts to charities and schools since 2010? By what percentage have SRP salaries increased since 2010?

Response Subject: SRP Corporate Pricing Response to Public Comment #ff8604ad

Response:

William Souders,

Thank you for your interest in SRP's Pricing Process. Please find responses to your questions below:

1. In 15 years since 2010, why hasn't SRP built enough plants to keep residential customers from paying for peak hour energy rates?

SRP Response:

SRP continues to build and acquire new power plants to meet the growing energy needs of our customers. Residential customer energy use has always been highest in the late afternoon during the summer months. This is the time of day when Phoenix hits peak temperatures and many of our customers are coming home from work, turning up their air conditioners, cooking dinner, and performing other tasks that require electricity. SRP has added power plants that are specifically designed to operate during this part of the day, including battery storage and flexible natural gas units, which has allowed SRP to maintain reliable power despite the significant growth we are seeing in our service territory. However, the cost to serve customers during this part of the day is still much higher because SRP is using its entire power generation fleet during these hours, and market prices are highest across the west. Therefore, SRP continues to offer

time-of-use rates to incentivize lower usage during these hours. These time-of-use rates are optional and customers who prefer to pay the same price for energy at all times of day can subscribe to one of the basic price plans.

2. Why aren't you working for residential rate payers?

SRP Response:

SRP is a community-based, not-for-profit utility. SRP does not have stockholders or pay dividends; revenues are reinvested back into our electric grid for the benefit of all customers.

3. Is reducing the cost of electricity one of your goals? Why not?

SRP Response:

Yes, SRP offers a full range of energy efficiency programs to help both our residential and business customers reduce their cost of electricity. These programs range from simple low-cost devices to comprehensive system improvements. SRP has comprehensive and long-term 2035 Sustainability goals, one of which focuses on energy efficiency. This energy efficiency goal states that SRP will deliver over 4 million megawatt hours of aggregate energy savings by 2035 through SRP's portfolio of energy efficiency programs.

4. Has SRP reduced gifts to charities and schools since 2010?

SRP Response:

Funding for SRP's corporate contributions (gifts to nonprofits including the education sector) is based on a 2.8% inflation factor applied to the forecasted number of SRP customers and annual customer revenue.

The number of customers has grown by 22% and customer revenue has grown by 51% since 2010 and the contributions budget has been commensurate to that.

5. By what percentage have SRP salaries increased since 2010?

SRP Response:

SRP has an annual merit increase based on employee performance. Since 2010 the average merit increase has been 3.04%.

Name: Earl Schneider

Record Number: d5cdb18d

Delivery Method: Digital Submission

Received Date: 2/24/2025

Comment:

I have solar and my proposed priceing increase is higher per month than those who don't have solar??? After the initial hook up costs you are sayin it still costs to have my free power put back into the line every month??? How do you account for this?? It doesn't figure that way to me. Where do the extra charges accrue each month?

Response Subject: SRP Corporate Pricing Response to Public Comment #d5cdb18d

Response:

Earl Schneider,

SRP understands that rooftop solar panels can be a significant investment and appreciates your commitment to renewable energy. Your SRP bill will be lower with solar generation than it would be without, though SRP must bill for the amount needed to cover the costs of providing you with electric service. Typically, solar customers continue to rely on SRP for around two-thirds of their electricity needs, especially during peak times when electricity is most expensive.

Under SRP management's proposal, customers on solar price plans (E-13, E-14, E-15, and E-27) have a higher percent average increase because, relative to other residential customers, they pay a lower percentage of the costs incurred by SRP in providing those customers with electric service. Currently, customers on solar price plans do not pay the full amount of the fixed costs that SRP incurs to serve those customers; the unpaid costs are being borne by other customers.

The proposed changes bring the residential and residential solar classes closer together and provide more appropriate cost recovery consistent with SRP's Pricing Principles of Equity, Cost-Relation, and Gradualism.

At the same time, management's proposal aims to improve the experience for solar customers without shifting costs to others. The proposal simplifies the current portfolio of residential price plans by moving from six residential time-of-use plans and four solar price plans to two time-of-use plans (E-28 and E-16) that will be available to customers with and without solar. Solar customers on those new plans will have the same Monthly Service Charge, time-of-use hours, and energy charges as customers without solar, with no additional grid access fees.

They can maximize savings by using their generation on-site to offset the full retail per kWh price. Any energy exported to the grid will be credited at an export rate (to be updated each year), which is based on a three-year average of the real-time market prices for energy.

Although it is not part of the pricing proposal, SRP management anticipates, after the conclusion of the pricing process, developing and seeking Board approval for a new residential solar program that recognizes the benefits of certain environmental attributes. The program will be designed to provide a simple path for residential customers to realize a financial benefit for Renewable Energy Certificates applicable to their solar generation by transferring those environmental attributes to SRP. The program, if approved, will not only support SRP's renewable energy goals, but will also reinforce sustainable energy solutions.

Name: Jeffrey Gilbert

Record Number: 31479d50

Delivery Method: Digital Submission

Received Date: 2/25/2025

Comment:

I have prepared a slide set presentation as a follow up to the my comments at the 11 Feb meeting. Please let me know how to submit it and or present it to the board. Thank you. -- Jeff Gilbert

Response Subject: SRP Corporate Pricing Response to Public Comment #31479d50

Response:

Hi Jeff,

Please send the presentation to CorporateSecretary@srpnet.com and we will upload for the Board to view.

Thank you,

SRP Corporate Secretary's Office

Name: Glenn and Ann Brockman

Record Number: MI7126789

Delivery Method: Mailed to SRP

Received Date: 2/25/2025

Attachments: PriceProcessComment_20250225.pdf

**To receive a copy of Attachments please contact the Corporate Secretary's Office and Reference Record #MI7126789*

Comment:

*See attached letter received via USPS on 2/25/2025

Response Subject: SRP Corporate Pricing Response to Public Comment #MI7126789

Response:

Hi Glenn and Ann,

Thank you for the letter.

SRP sets prices based on our costs. Over the last decade, the grid has evolved and there is now a low-cost, low-carbon period during daylight hours when solar energy is abundant. SRP management is therefore proposing low-price daytime periods to encourage customer usage during these hours, thereby lowering emissions and costs.

Specifically, SRP management is proposing to simplify SRP's portfolio of Price Plans and bring the super off-peak concept that EV customers currently enjoy to the new residential and all commercial time-of-use Price Plans. Under the proposal, SRP's two residential time-of-use plans going forward (E-16 & E-28) would each include daily 8 a.m. – 3 p.m. super off-peak prices that are more than 50% lower than basic price plans. The on-peak period would be weekdays from 6 – 9 p.m. or 5 – 10 p.m., depending on the Price Plan. All proposed commercial and industrial Price Plans that include time-of-use hours would also have a low-price period from 8 a.m. – 3 p.m. All residential customers are subject to the same monthly service charges, same TOU hours, and same per-kWh delivered charges under the proposal.

Although it is not part of the pricing proposal, SRP management anticipates, after the conclusion of the pricing process, developing and seeking Board approval for

a new residential solar program that recognizes the benefits of certain environmental attributes. The program will be designed to provide a simple path for residential customers to realize a financial benefit for Renewable Energy Certificates applicable to their solar generation by transferring those environmental attributes to SRP. The program, if approved, will not only support SRP's renewable energy goals, but will also reinforce sustainable energy solutions.

As you mention, SRP is a community-based, not-for-profit utility. SRP does not have stockholders or pay dividends; revenues are reinvested back into our electric grid for the benefit of all customers.

Name: Steven Neil

Record Number: 2fa762bc

Delivery Method: Digital Submission

Received Date: 2/23/2025

Comment:

Regarding the publication entitled "COST ALLOCATION STUDY IN SUPPORT OF PROPOSED ADJUSTMENTS TO SRP'S STANDARD ELECTRIC PRICE PLANS EFFECTIVE WITH THE NOVEMBER 2025 BILLING CYCLE", it references "LOLP studies". I am very interested in studying all the information you have about these LOLP studies such as emails, spreadsheets, powerpoints, texts, etc. This would include the full phrase of Loss of Load Probability and other synomymic words and phrases, and key words such as "LOLP-Weighted Peak" and LOLP-Weighted Net Peak" and "LOLP Peak" and variants with and without hyphenation. Please also include any discussion of the 4CP measurement that is also referenced in the Cost Allocation Study and the data that supports the data in the study. I have received one spreadsheet named "LOLP Study Resulst.xlsx"(sic), but there may be older versions of this workbook and contributory parts also that relate to this request, so those too please. The Cost Allocation Study also references previous LOLP studies. For starters, please include just a list of those studies including timeframes each covered, and then I'll know if I need to make a followon request for them. But if there is a deadline for making price process information requests and you will not be providing that list a couple days before that date, please consider them to be part of this initial request. Say anything used starting with the 2019 price process and up until the present study. Speaking of deadline dates, I note your recommendation in the legal notice that submissions be made by last Friday, 5 pm, and right now is before your offices open again, so this should not be a burden. THANKS IN ADVANCE!

Response Subject: SRP Corporate Pricing Response to Public Comment #2fa762bc

Response Attachments: TOU White Paper_SN14.pdf; GM Staff - TOU Overview_SN14.pdf; 20221117_FB_Peterson_TimeofDayPilot_ppt_SN14.pdf;

**To receive a copy of Attachments please contact the Corporate Secretary's Office and Reference Record #2fa762bc*

Response:

Steve,

Though this request was submitted after the February 21 deadline, SRP will use reasonable efforts to provide available responsive materials, to the extent related to the price process or the pricing proposal. The following documents are attached:

- **TOU White Paper** – Information that Pricing presented internally in September 2021 about the need to update TOU hours, including loss of load simulations.
- **GM Staff - TOU Overview** – Presentation that Pricing made to executives in September 2021, including LOLP study results.
- **20221117_FB_Peterson_TimeofDayPilot_ppt** – Presentation that Pricing made to the Board's Finance and Budget Committee in November 2022 about how, because, on-peak TOU hours were no longer aligned to LOLP, TOU hours would need to be updated by 2025, and therefore recommending a Pilot Price Plan to study 6 – 9 p.m. on-peak hours.

Management expects that any existing data files related to the subject of your request would require a detailed review before production and would likely require significant contextualization and refinement (e.g., breaking links) to provide any meaningful information. If, after your review of the attached materials, you wish to receive any additional files, please submit a new request, and Management will assess the relevance of any existing files, and the expected burden involved in producing them.

Evolving Time-of-Use Hours

CORPORATE PRICING

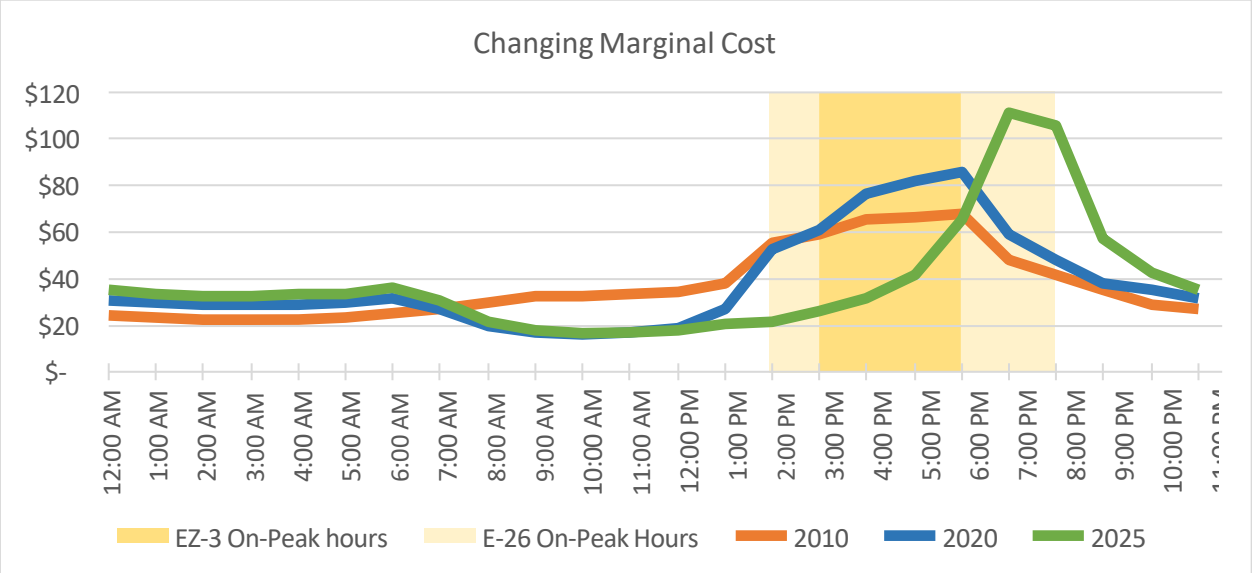
SEPTEMBER 2021

Executive Summary

Time-of-Use (TOU) programs provide customers a way to reduce their bills if they can lower the utilities' cost to serve them by shifting their electricity usage away from the parts of the day when it's expensive to generate electricity. SRP's TOU programs were designed in decades past for a different grid. With traditional resources like coal and natural gas, costs were highest when loads were highest, typically around 4:00-5:00PM. On EZ-3, SRP's default TOU program, the on-peak hours were intentionally aligned with that high cost period from 3:00-6:00PM. SRP's E-26 Price Plan has extended hours from 2:00-8:00 PM, covering more high cost hours. Historically, the TOU programs worked as intended and reduced peak-load by over 200 MW, lowering SRP's costs, and lowering those customer's bill by an average of 4%, and for the most aggressive shifters over 20%.

SRP and others in the region are in the process of changing resources to meet sustainability objectives. As part of those changes, SRP will have over 2,000 MW of solar by 2025. But solar availability changes throughout the day and so as solar becomes an increasingly important resource the relationship between high resource capacity cost and high load somewhat changes. Costs are now dependent on the gap between total load and resource availability. There may be times of the day (e.g., around 4:00 PM) when loads are high, but the abundance of solar means costs are low. While another hour (e.g., around 7:00 PM) might have loads just as high as 4:00 PM, but with no solar availability, costs are much higher. Additional load at 4:00 PM could be served by adding additional solar, whereas that same load at 7:00 PM would need solar *and* batteries or some other resource such as natural gas to serve, making the 7:00 PM load much more expensive than the 4:00 PM load.

The graph below shows how SRP's estimated marginal cost is changing over time. In 2010, costs peaked in the late afternoon but were relatively flat throughout the day. In 2020, the "duck curve" was apparent with higher evening peaks and lower mid-day lows. But by 2025, the cost curve will likely be significantly different, with new critical hours later in the evenings, and largely outside of EZ-3 on-peak hours.



Historically, TOU programs have aligned incentives such that SRP and its customer can work together to save money and pass those savings to TOU customers. But when high-cost hours change, on-peak hours will not be aligned with high-cost times; TOU will no longer save SRP money and there will be no cost savings to pass to customers. EZ-3 in particular will be problematic. It was designed for the old grid when costs were highest from 3:00-6:00 PM and customers on the Price Plan shift usage away from those hours to later in the evening, right when the future grid will be most resource constrained. This will likely be a problem by 2025. Without changes to the program, not only will TOU programs stop giving around 200 MW of benefit, but EZ-3 could *increase SRP's need for capacity* by around 45 MW because the program causes people to shift usage to the times SRP will be capacity constrained.

However, changing TOU hours would likely fix this concern and may even help SRP integrate more solar onto the grid. With the addition of a super-off-peak period, TOU customers may be incentivized to shift energy, or make sure new sources of usage such as electric vehicle charging, happen when there's plenty of solar production available, making the grid greener. And on-peak hours could be moved later in the evening to reduce SRP's additional capacity needs, making the grid more affordable if customers respond.

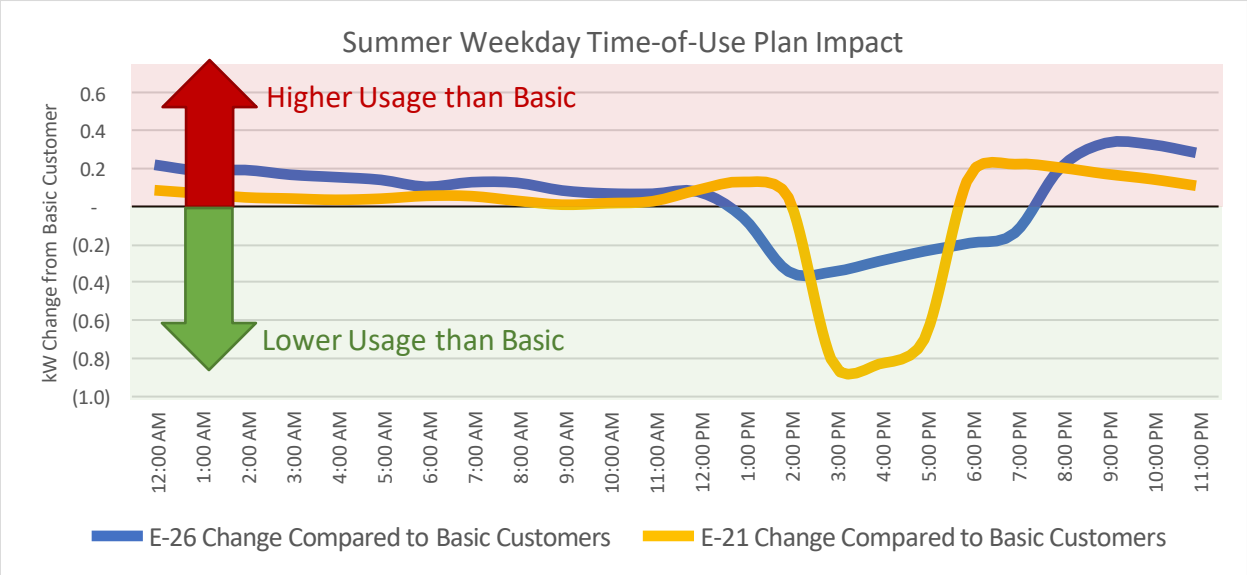
Time-of-Use Background

Time-of-Use (TOU) pricing plans are a mechanism for customers to lower their bills if they can use electricity in ways that lowers the utilities' costs. Certain times of the day and year cost significantly more to provide electricity. For customers who are willing to use less electricity during these times or shift load to less expensive periods, TOU price plans can save both the utility and the customer money.

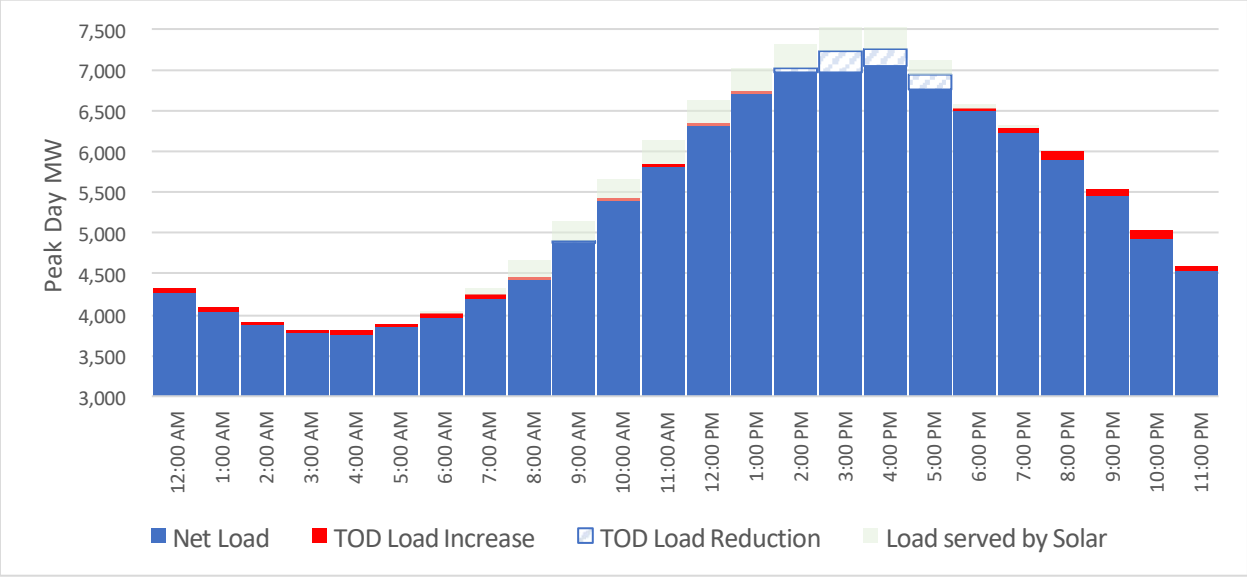
SRP determines on-peak hours by analyzing costs and loads. In the past, electricity has typically been most expensive when loads were highest. This is because "peaker plants" were required to meet peak load that might only happen for a few hours a day during part of the year. The rest of the year, the plant would be unused. So the cost of the plant could only be spread over a small number of hours. In contrast, if load were flat, "base load plants" could be used in many hours. Their costs could be spread over most of the year, making the average cost per MWh of base load plants much lower than the hourly cost of peaker plants.

SRP's TOU Price Plans, were designed with higher prices when costs were highest. Historically, SRP's TOU hours have aligned well with both peak loads and high cost periods.

To understand the impact of our TOU Price Plans on customer load, Pricing studied customers that switched to one of SRP's residential TOU Price Plans between 2015 and 2018 and compared the way they changed their electricity usage to similar customers who remained on the basic Price Plan. As expected, EZ-3 customers reduced load during on-peak hours from 3:00-6:00PM and shifted that load to other hours, particularly in the hours shortly after 6:00PM. E-26 customers shifted less load but for the longer duration of their on-peak hours from 2:00-8:00PM and increased their usage in the hours after 8:00 PM.



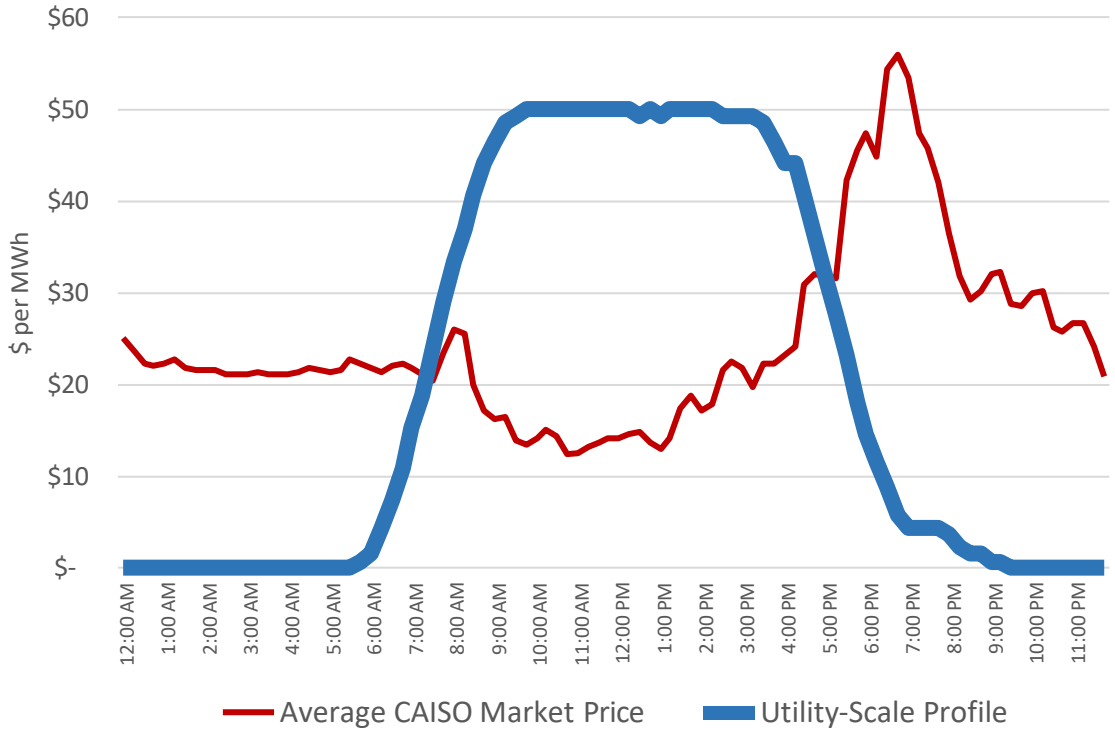
If we apply these TOU induced load changes to all 200,000 EZ-3 customers and over 100,000 E-26 customers, system load is reduced a substantial amount during the on-peak hours and moved to the hours before and after the on-peak period. In summer of 2019, for example in the graph below, our TOU programs reduced load (and thus capacity requirements) by over 200 MW. The red bars show load shifted to off-peak hours, which was over 90 MW at 8:00PM when both price plan's on-peak periods ended.



This load shifting—away from high cost periods and into lower cost ones—resulted in significant capacity savings for SRP and so those savings were passed to TOU customers, who saw an average of 4% bill savings.

The Grid in 2025 with 2,025 MW of Solar

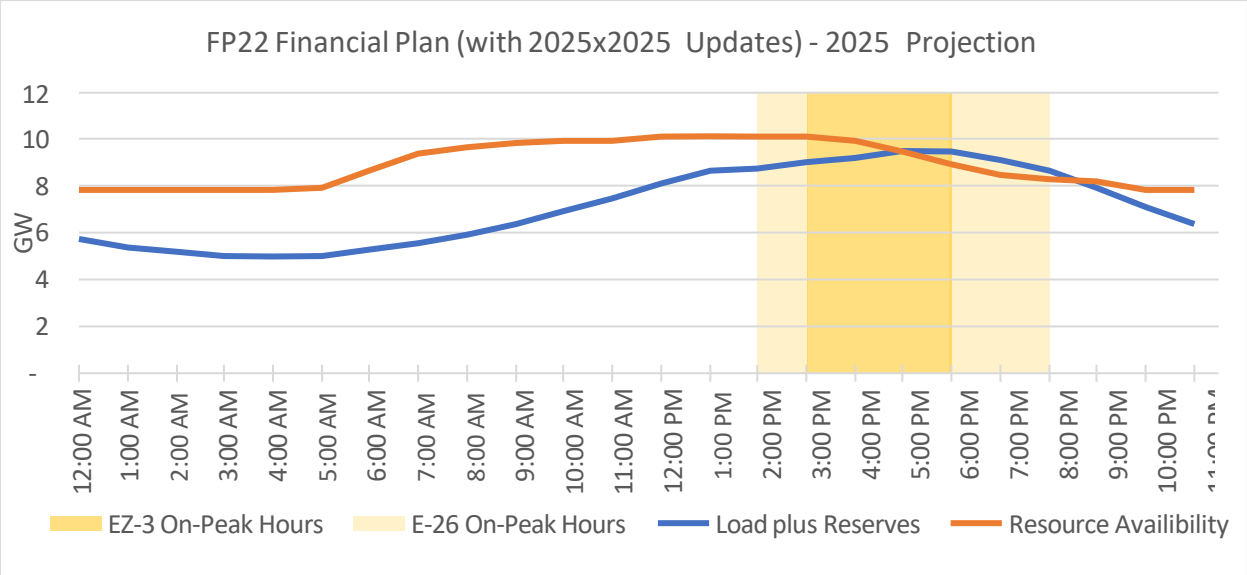
Technologies that provide our electricity have begun to change. By 2025, SRP expects over 2,000 MW of solar generation and other utilities are making similar additions throughout the region. This solar is expected to reduce greenhouse gas emissions substantially. But it is changing the traditional hourly cost profile. With the steep drop in photoelectric panel costs over the past decade, the middle of the day is now the lowest priced hours for electricity on the market. And with the retirement of traditional thermal powered generation, electricity costs during evening and night hours have increased.



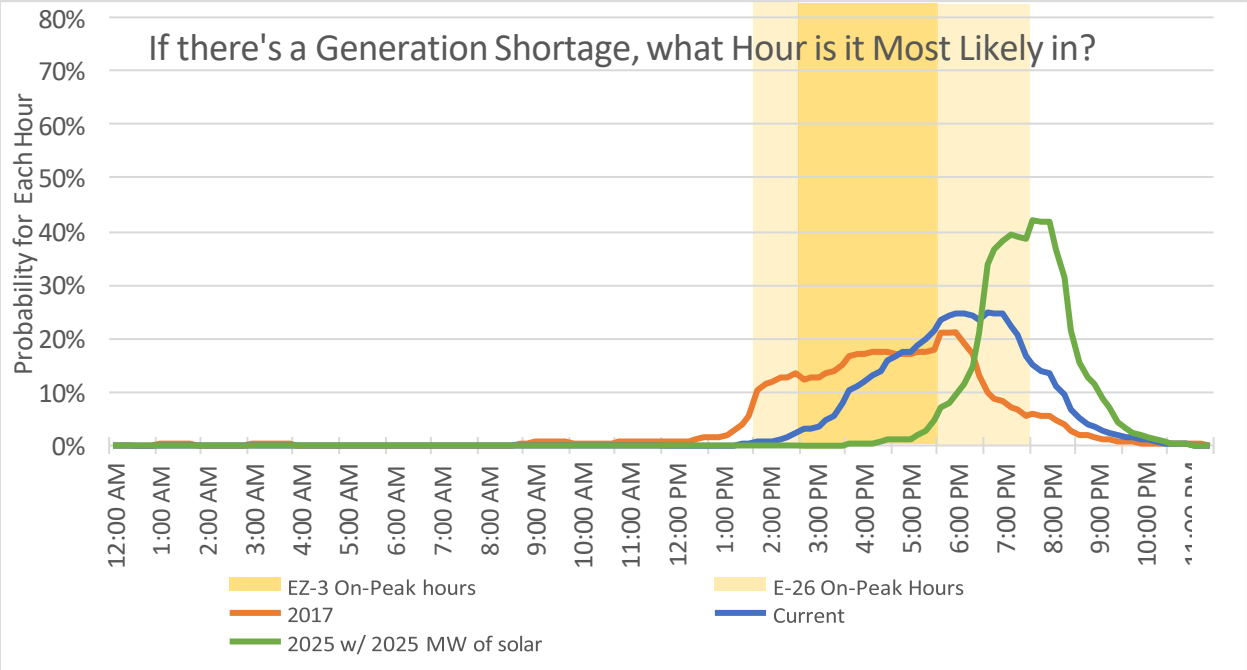
This is because both regionally and within SRP's system, resource availability now varies by time of day. During day-light hours, SRP has more than enough available capacity to meet expected loads. But in the evening, after solar production has dropped off, there is a significant gap between current and planned resources and expected load.

For example, total load could be the same at 4:00PM and 7:00PM but if there is significantly more solar production at 4:00PM, the load at 4:00PM will be much lower cost to serve. Additional load at 4:00PM could be served by adding a solar resource while the load at 7:00PM might require a solar resource and a battery resource (to shift the solar production to when it's needed) or a natural gas resource, making 7:00PM load more expensive than 4:00PM, even if both hours had the same load.

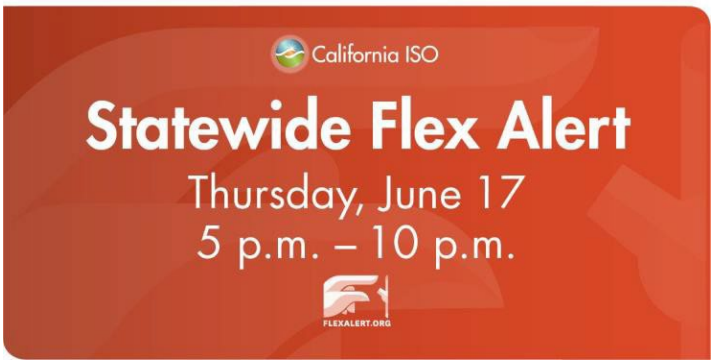
The graph below shows SRP's expected resource availability in 2025 as well as expected load after the addition of solar. Notice that from 3:00-5:00PM, current on-peak hours for EZ-3, there will likely be sufficient resources to meet load. From 5:00-6:00PM we'll transition and after 6:00PM when solar production has declined, there will be a need for additional capacity, driving up costs in these hours.



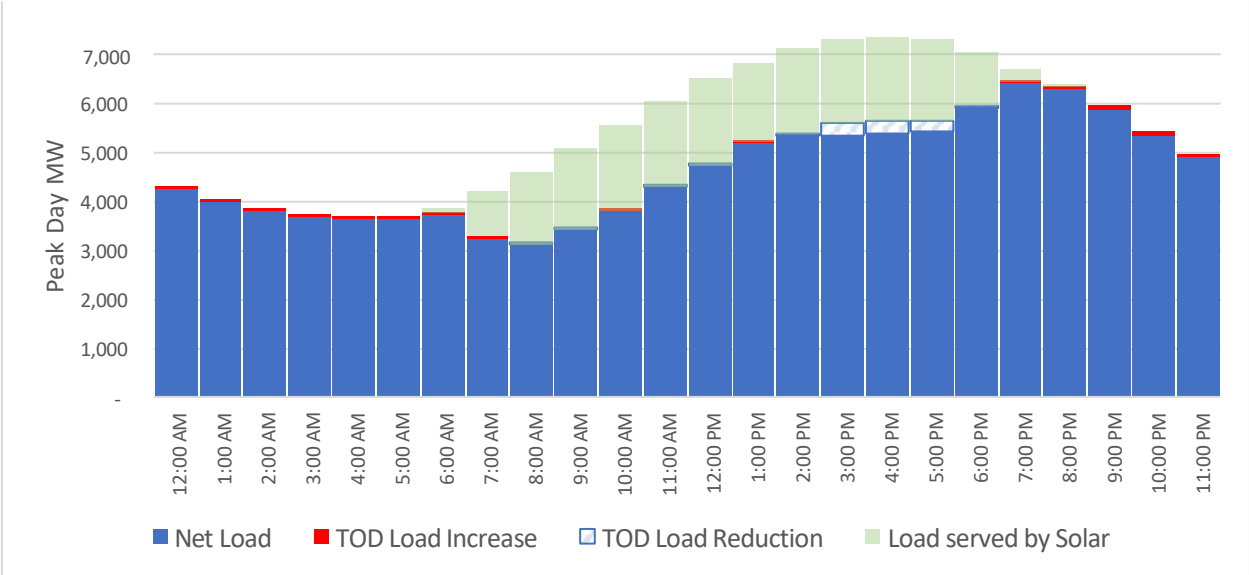
More detailed analysis confirms that critical hours will be moving past current on-peak hours. The graph below shows the results of 1,000 simulations summarizing different combinations of possible load growth, solar production, and temperatures. Results show, probabilistically, which hours had the highest chance for loss of load, and thus the hours responsible for expensive capacity additions. In 2025 with 2025 MW of solar, there were almost no cases where SRP had loss of load from the hours of 3:00-6:00PM. The hours from 6:00-9:00PM contained the bulk of the probability for loss of load. And even the 9:00-11:00PM hours have more chance of a loss of load event than 3:00-6:00PM. When calculating marginal cost, these studies help determine what hours additional capacity costs are allocated to. For example, battery costs can be attributed to the hours where their discharging is needed to maintain reliability. TOU hours aligned with marginal costs can then help reduce the amount of these resources that will be needed.



Note that SRP is not the only utility with shifting critical hours. California now has days where they've issuing alerts asking for "consumers to voluntarily conserve electricity from 5 p.m. – 10 p.m. to help maintain grid stability."



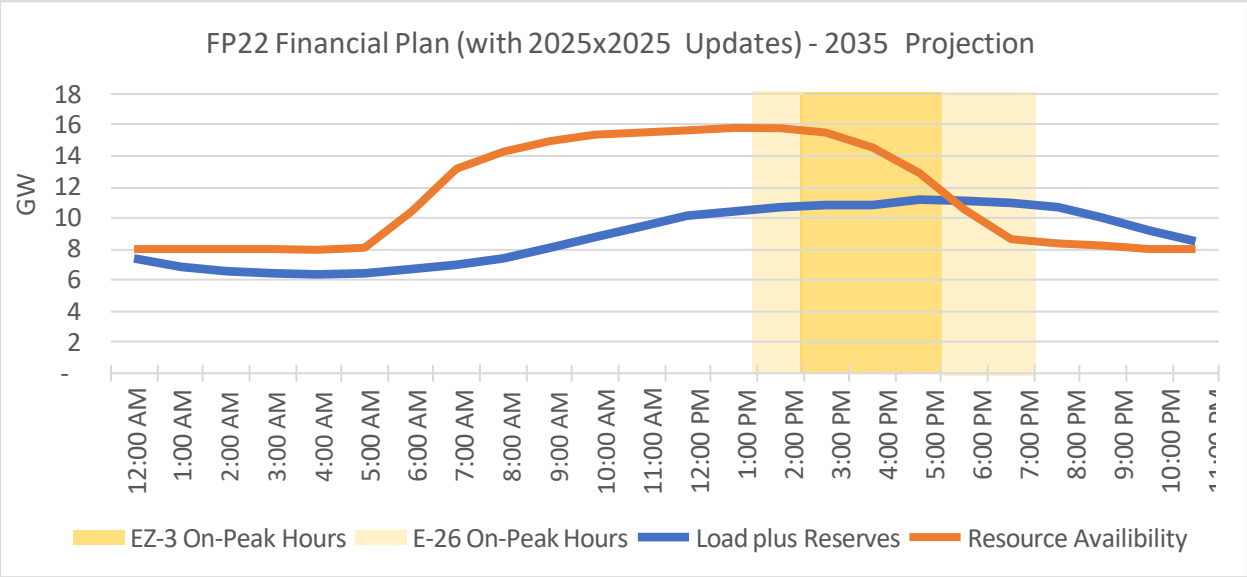
This shift in critical hours is challenging when combined with the impacts of our current TOU programs. As previously discussed, the current structure of EZ-3 is designed to shift load away from 3:00-6:00PM to hours after 6:00PM. The graph below shows the likely impact of SRP's current EZ-3 hours combined with over 2,000 MW of solar. As can be seen, peak net load does not occur during the 3:00pm-6:00pm on-peak hours. EZ-3 is lowering load at a time when there's an abundance of solar generation available. The most critical hours will likely be around 7:00pm-9:00pm. What's particularly problematic is now the "shifted" usage is being shifted to exactly the most critical hours of 7:00-9:00pm. It is probable that by 2025, the existing EZ-3 hours will be increasing peak net load.



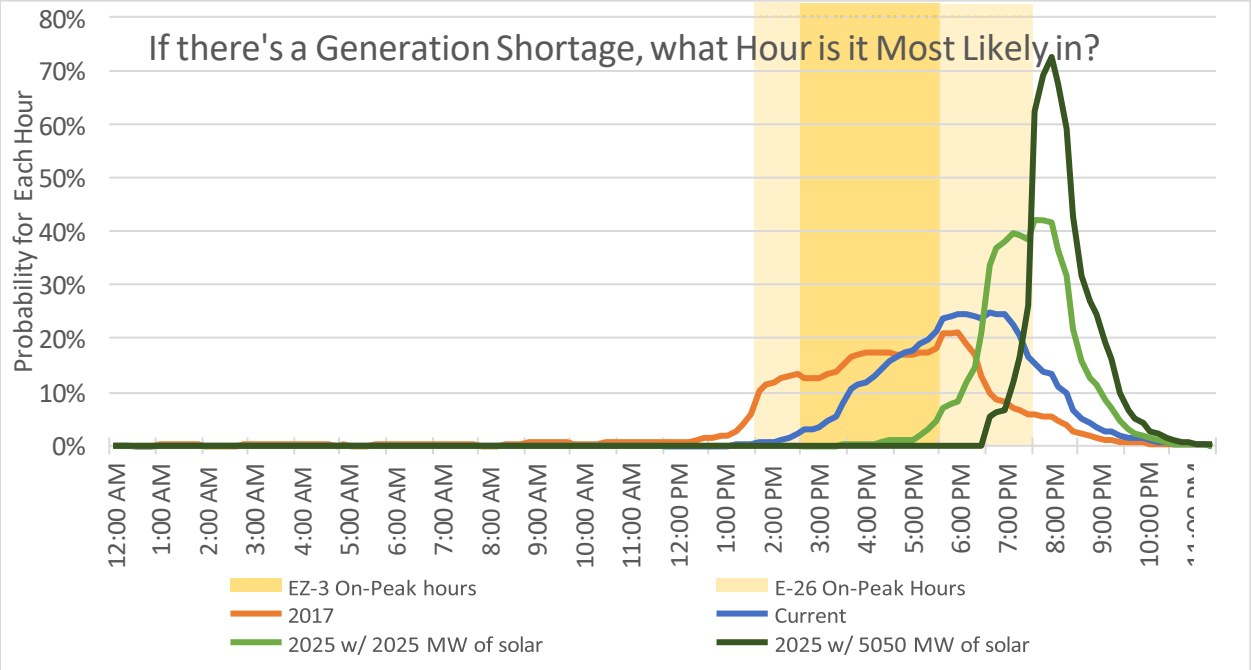
In 2025, our EZ-3 program will likely be increasing net system load by around 45 MW. This means SRP would need to add capacity costing up to $11M a year to supply the extra peak load caused by our own TOU programs. Overall, the average EZ-3 customer will be increasing SRP costsif nothing changes between now and then.

Grid in 2035

This concern does not appear to be temporary or restricted to 2025. By 2035, SRP may have as much as 5,000 MW of solar but with ever growing loads, we'll need additional resource capacity, batteries, or some form of demand response program to serve load once solar production has declined in the evening.

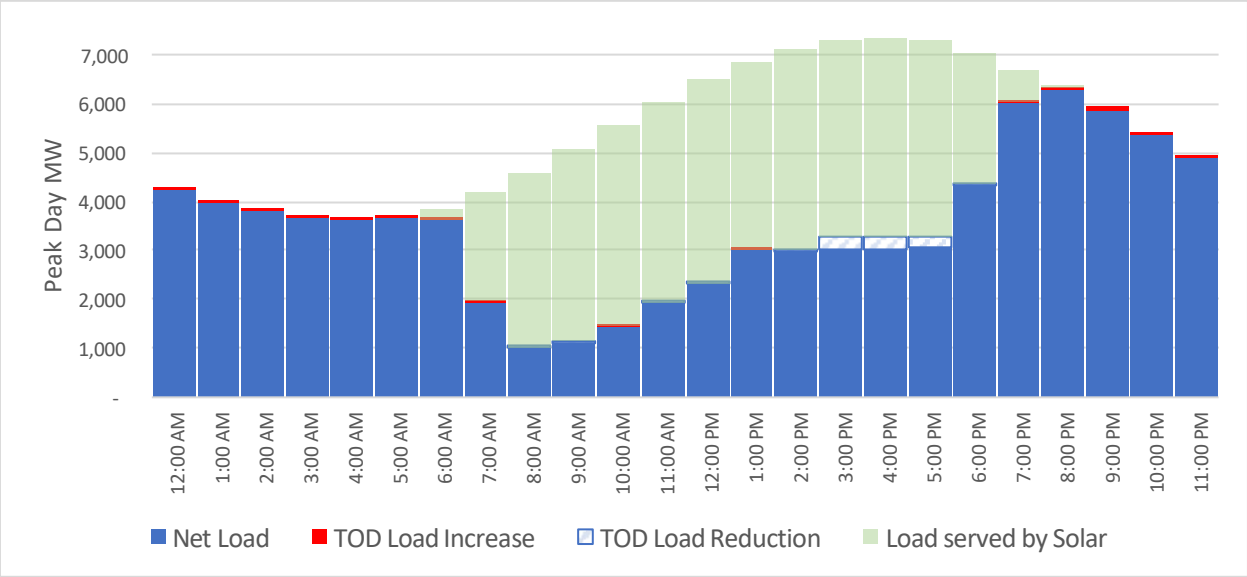


Further loss of load simulations confirms the problem. With 5,000 MW of solar, there were no simulated cases with loss load from 3:00-7:00PM. All instances of lost load happened from 7:00-11:00PM[1].



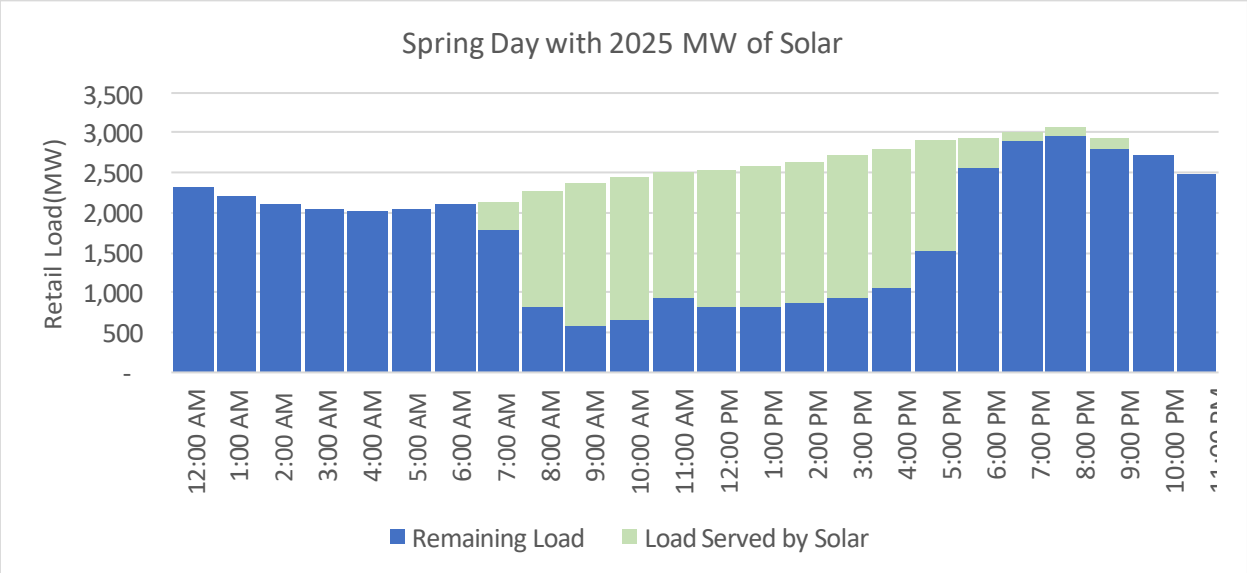
[1] Note a detailed simulation of 2035 was not available. To get an idea of what the loss of load simulation will look like when there is 5,000 MW on the grid, we used 2025 data but scaled the solar up to 5,000 MW

Once again, our existing EZ-3 program is projected to be actively increasing SRP's costs in 2035. With 5,000 MW of solar, our EZ-3 load shift is even more dramatic. As seen below, EZ-3 is reducing load from 3:00-6:00PM when there is an abundance of solar but increasing load from 6:00pm and onwards. This will increase the amount of non-solar capacity that SRP must acquire, increasing overall costs.



Super-Off Peak

Solar resources bring opportunities to our TOU programs as well as challenges. As seen in the graphics above, for large portions of the day, solar resources will make energy relatively low cost. This low-cost period is even more dramatic outside of the peak summer days. For example, the graph below shows a spring day with 2,025 MW of solar.



To provide power when the sun is down and solar isn't producing, some generators need to be online 24 hours a day (such as our nuclear). This means that some solar production on spring days may not be able to be used and may need to be curtailed or exported, possibly even at negative prices. Already, during

11% of hours solar is producing there are negative market prices. And with 2,025 MW of solar, SRP expects to be curtailing between 7% and 26% of annual solar production, meaning there will be times of the day with only minimal costs if load increased at those times.

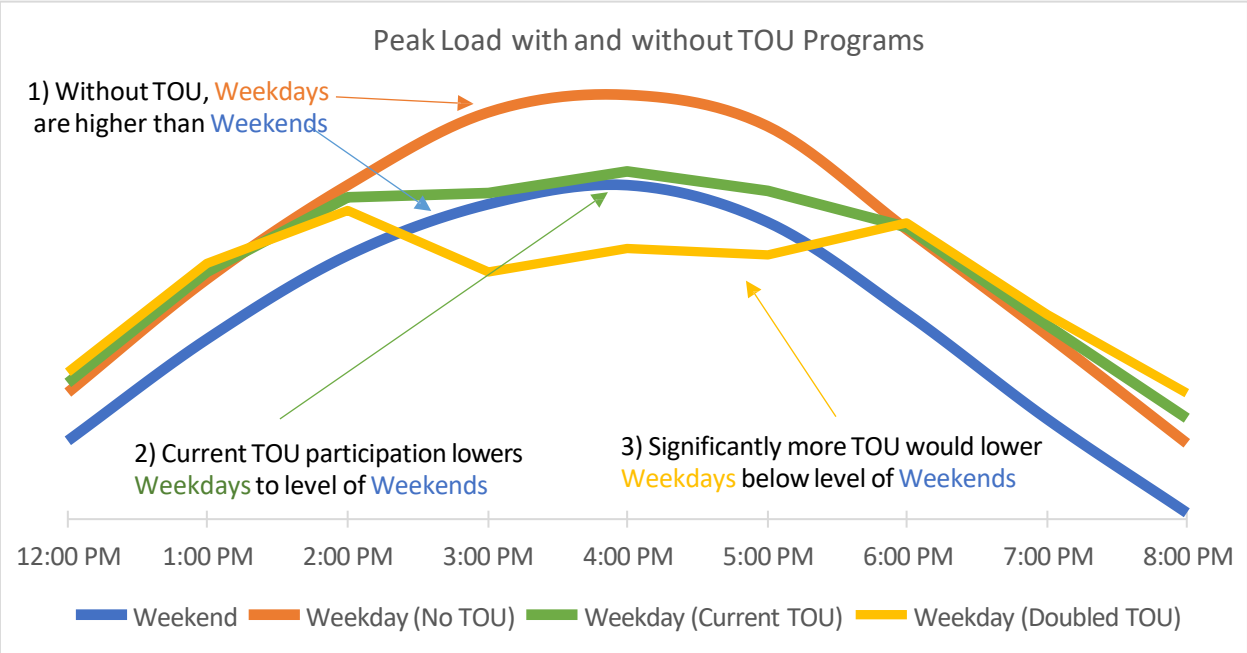
Instead of a traditional grid with a distinct high-cost period, the new grid will have both a distinct high-cost period and low-cost period. This creates the opportunity to introduce a super-off-peak price on our Price Plans. Customers who shift usage to this period will not only be lowering costs, they'll be helping to integrate solar resources onto the grid.

In particular, with an expected 500,000 electric vehicles (EV) coming to SRP service territory over the next few decades, a super-off peak period may prove to be extremely beneficial. By charging during the day, new EV load could be sourced from sustainable solar instead of natural gas units running at night.

This provides an opportunity to increase engagement of our TOU programs by appealing to environmentally-conscious customers instead of just cost-conscious customers. We may be able to change communications around the programs to emphasize environmental benefits of shifting load such as "precool your home with low-cost solar" or "charge your electric vehicle with the sun."

Weekends

If there's a need for additional MW from TOU programs above the levels SRP already has, we may also need to consider on-peak weekends. Existing TOU programs have lowered the expected weekday peak to approximately the same level as weekends. Further expanding TOU programs, without including on-peak weekends, will likely lower the weekday peak below the weekend peak, which will not lower the system peak (which will then just be the weekend peak).



Conclusion

In the past, time-of-use plans have provided an opportunity for customers who use less electricity during expensive times (or who can change behavior to do so) to save money. That proposition isn't changing. The only thing that's changing is when those high-cost periods are happening.

If SRP is proactive in modifying our TOU programs to reflect those changes, likely meaning changing TOU hours before 2025, our TOU programs can continue to reduce our capacity needs and provide savings to customers.

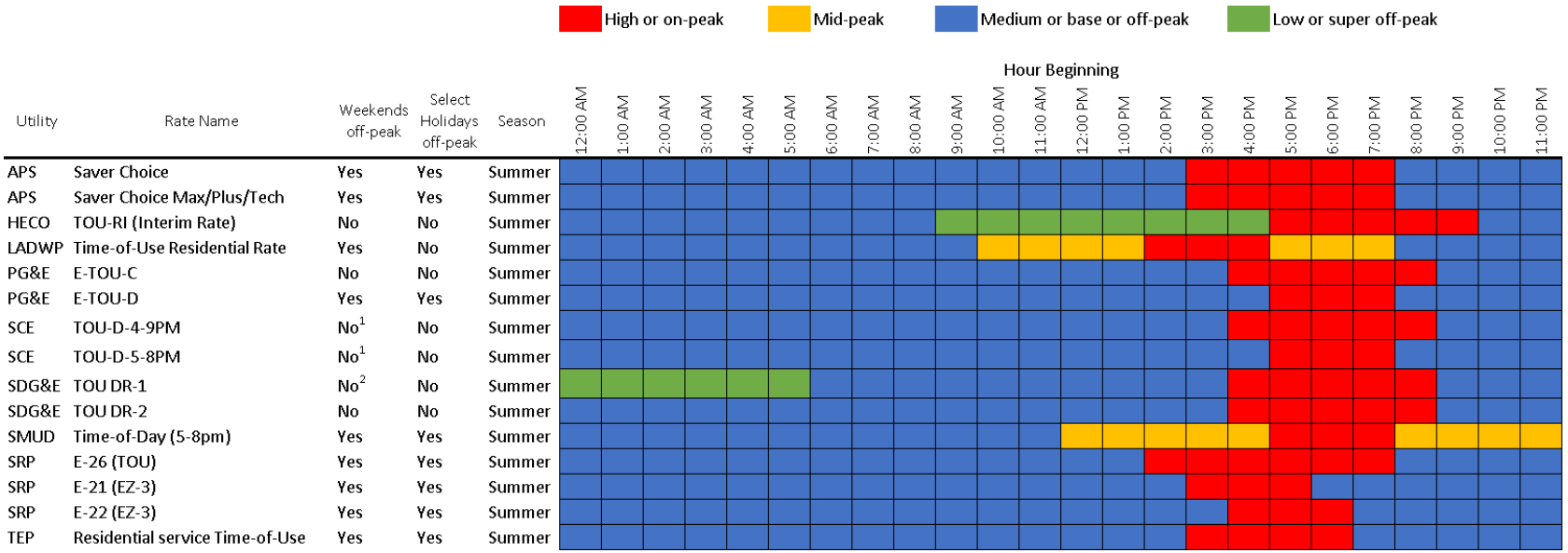
In addition, if we introduce super-off-peak periods to align to the now-distinct low-cost period, we'll provide customers with a way to not only save money, but also help ensure that their load is sourced through sustainable solar.

There are several related factors that will also need to be considered before making a final proposal such as:

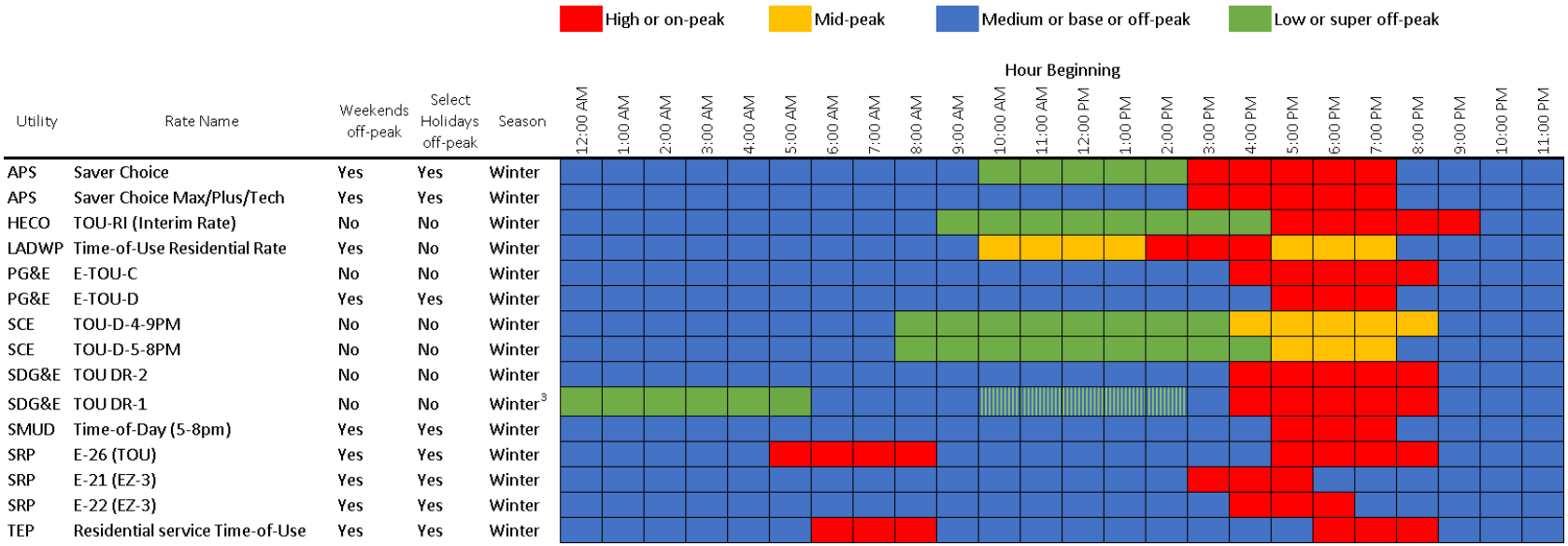
- On-peak weekends
- Holidays
- A four-month summer peak season and eight-month off-peak season
- Eliminating on-peak during the winter season
- The number of TOU programs
- Do peak start times need to be staggered for operational reasons?
- Should the basic plan (E-23) include super off-peak?

In order to determine which of these changes to propose and successfully implement any changes approved by the board, Pricing will work with internal and external stakeholders. For example, there may be technical changes in the meter and billing systems that will need to be coordinated one to two years in advance, influencing the timing of any changes. Exact hours and specific proposals will be determined closer to the next Price Process and will be informed by the ISP process and collaboration with stakeholders.

Appendix A: TOU Hours of Other Utilities with Significant Solar Installations



Utility	Rate Name	Weekends off-peak	Select Holidays off-peak	Season
APS	Saver Choice	Yes	Yes	Summer
APS	Saver Choice Max/Plus/Tech	Yes	Yes	Summer
HECO	TOU-RI (Interim Rate)	No	No	Summer
LADWP	Time-of-Use Residential Rate	Yes	No	Summer
PG&E	E-TOU-C	No	No	Summer
PG&E	E-TOU-D	Yes	Yes	Summer
SCE	TOU-D-4-9PM	No[1]	No	Summer
SCE	TOU-D-5-8PM	No[1]	No	Summer
SDG&E	TOU DR-1	No[2]	No	Summer
SDG&E	TOU DR-2	No	No	Summer
SMUD	Time-of-Day (5-8pm)	Yes	Yes	Summer
SRP	E-26 (TOU)	Yes	Yes	Summer
SRP	E-21 (EZ-3)	Yes	Yes	Summer
SRP	E-22 (EZ-3)	Yes	Yes	Summer
TEP	Residential service Time-of-Use	Yes	Yes	Summer



Utility	Rate Name	Weekends off-peak	Select Holidays off-peak	Season
APS	Saver Choice	Yes	Yes	Winter
APS	Saver Choice Max/Plus/Tech	Yes	Yes	Winter
HECO	TOU-RI (Interim Rate)	No	No	Winter
LADWP	Time-of-Use Residential Rate	Yes	No	Winter
PG&E	E-TOU-C	No	No	Winter
PG&E	E-TOU-D	Yes	Yes	Winter
SCE	TOU-D-4-9PM	No	No	Winter
SCE	TOU-D-5-8PM	No	No	Winter
SDG&E	TOU DR-2	No	No	Winter
SDG&E	TOU DR-1	No	No	Winter[3]
SMUD	Time-of-Day (5-8pm)	Yes	Yes	Winter
SRP	E-26 (TOU)	Yes	Yes	Winter
SRP	E-21 (EZ-3)	Yes	Yes	Winter
SRP	E-22 (EZ-3)	Yes	Yes	Winter
TEP	Residential service Time-of-Use	Yes	Yes	Winter

Evolving Time-of-Use Hours

Adam Peterson & Mark Carroll| 9/7/2021

Overview

- Time-of-Use (TOU) Program background
- Peak load reductions currently attributable to TOU Programs
- 2025x2025 solar impact on TOU program efficacy
- The types of changes SRP will need to make to TOU programs to ensure their continued value on a solar grid

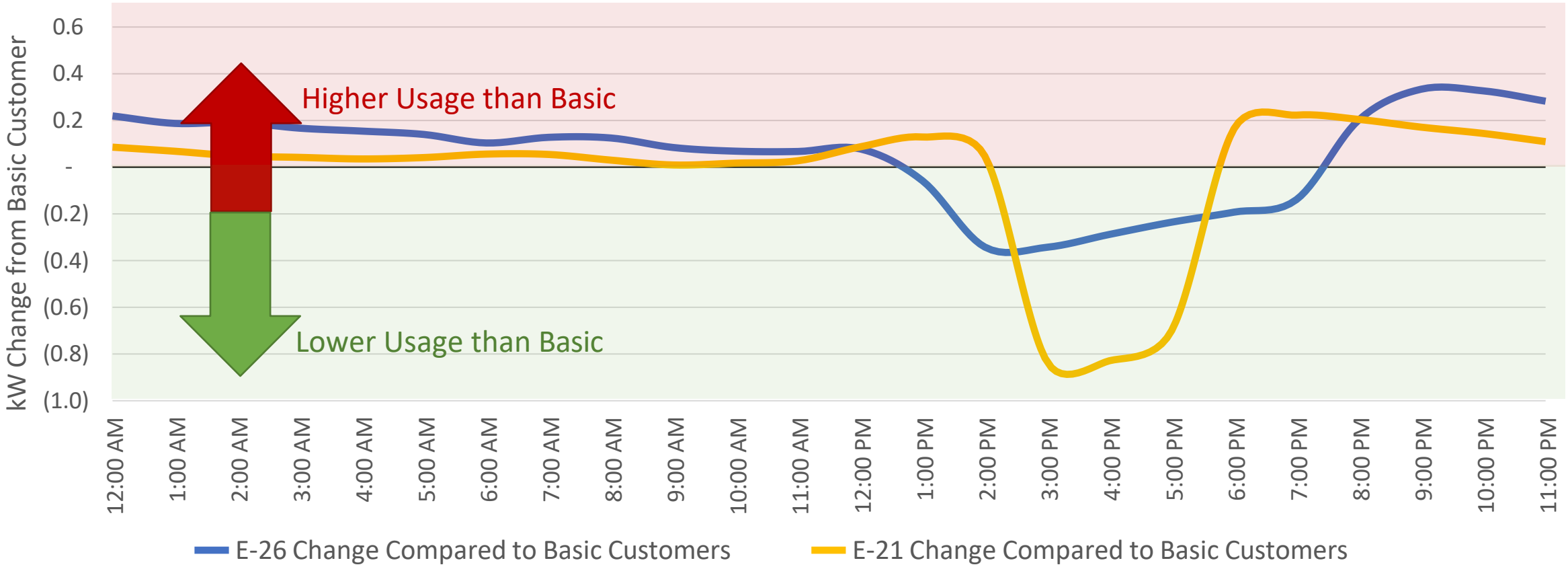
TOU Programs Today

SRP's Current Residential Programs

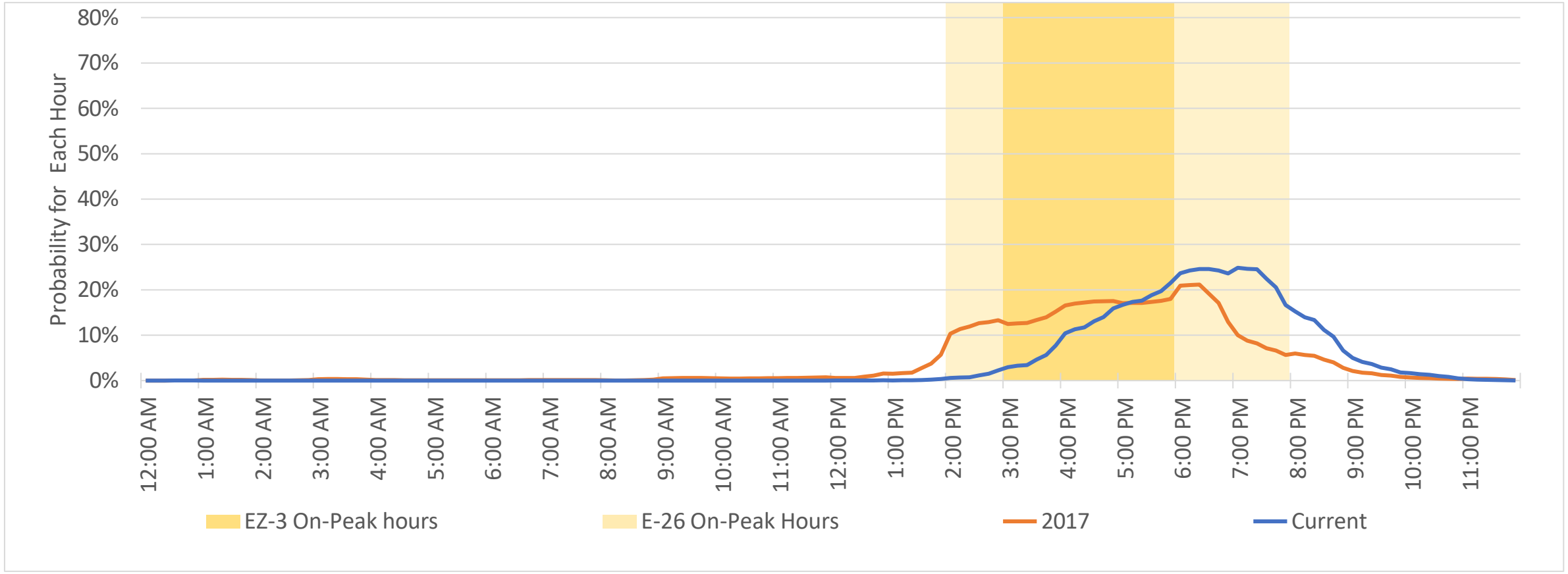
- **TOU: 2-8pm* (E-26) – 113,600 Customers, -5.8% annual growth**
- **EZ-3: 3-6pm (E-21) – 192,000 Customers, 4.2% annual growth**
- EZ-3: 4-7pm (E-22) – 11,000 Customers, 30.2% annual growth
- EV: 2-8pm* (E-29) – 4,000 Customers, 21.2% annual growth
- E-27P 2-8pm* (E-27P) – 1,800 Customers, 102% annual growth
- Solar Price Plans: 2-8pm* (E-13,14,15,27) – 17,000 Customers, 75% annual growth

*2-8pm summer on-peak hours; 5-9am/5-9pm winter on-peak hours; E-29 also includes 11pm-5am super-off-peak hours year round

Summer Weekday Time-of-Use Plan Impact

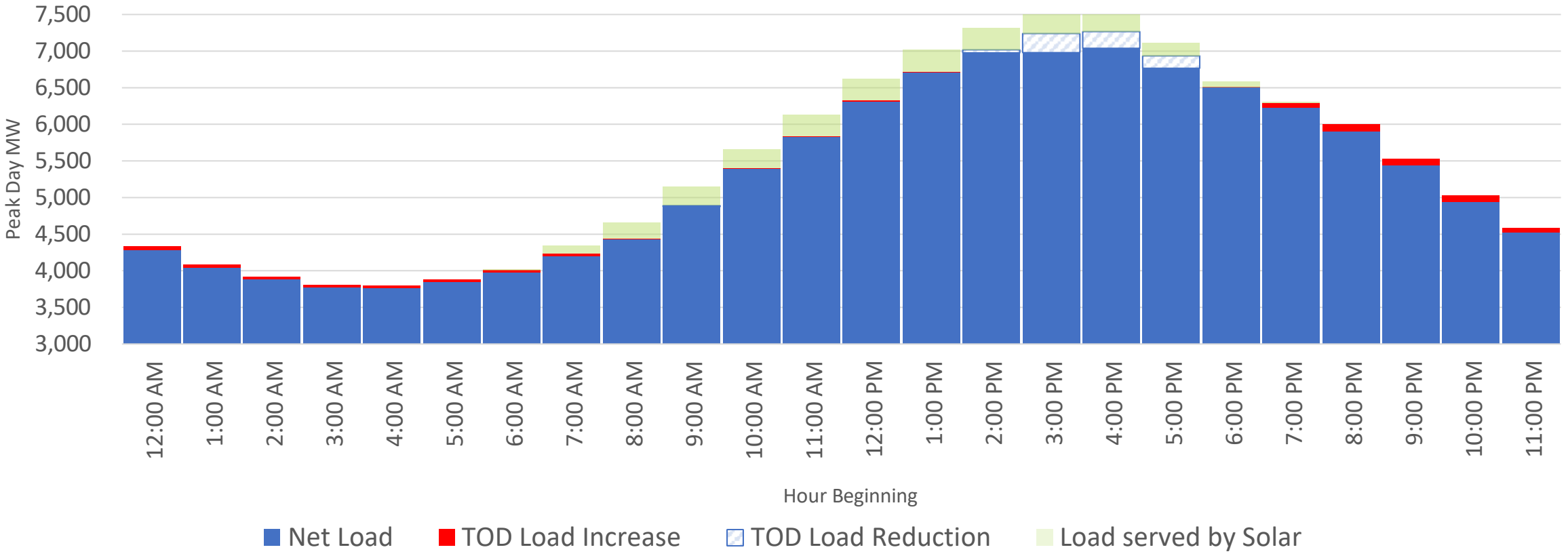


Loss of Load Probability (LOLP)



Note: Represents the hours in which a loss of load event are most likely to occur, given that there is an outage

Current Impact of TOU



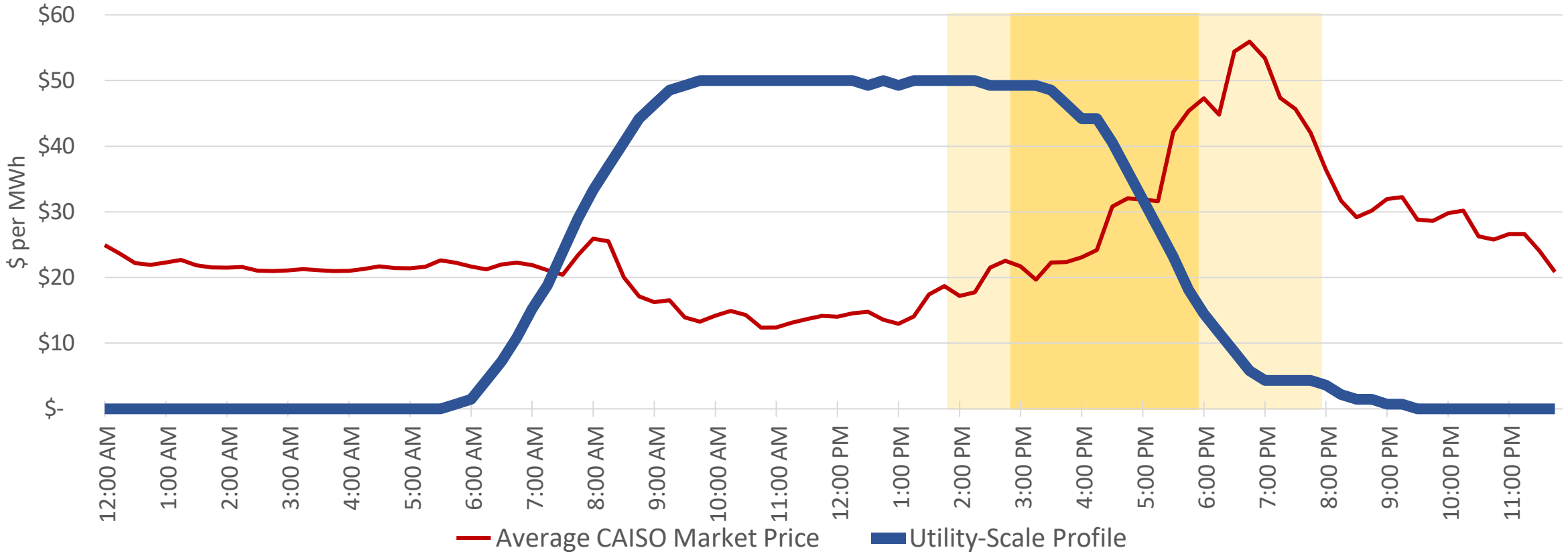
Note: Model of 2019 summer hourly load with varying amounts of solar

Conclusions

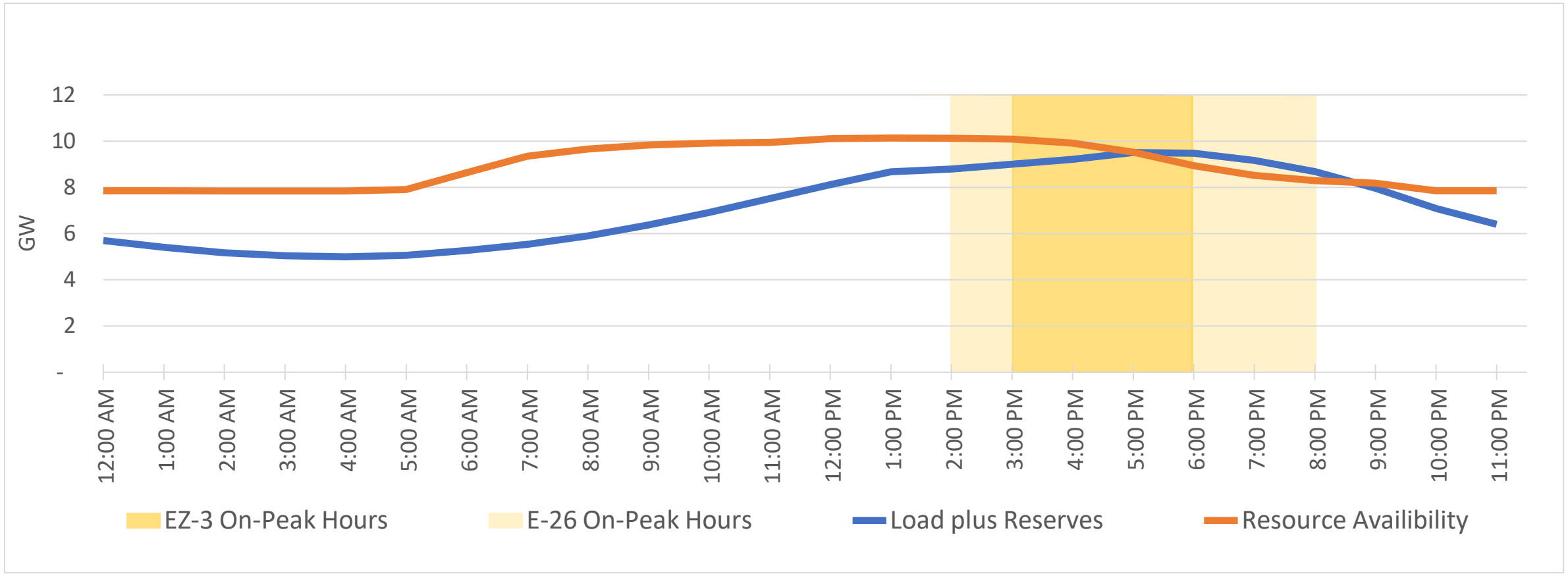
- Historically, EZ-3 and TOU programs aligned well with high-cost periods
- Programs likely reduced SRP's peak capacity requirements by 200+ MW
- SRP's costs were lowered, savings were passed to participants who reduced bills by an average of 4% and as much as 20% or more for extreme shifters

TOU Programs After 2025x2025 Solar Initiative

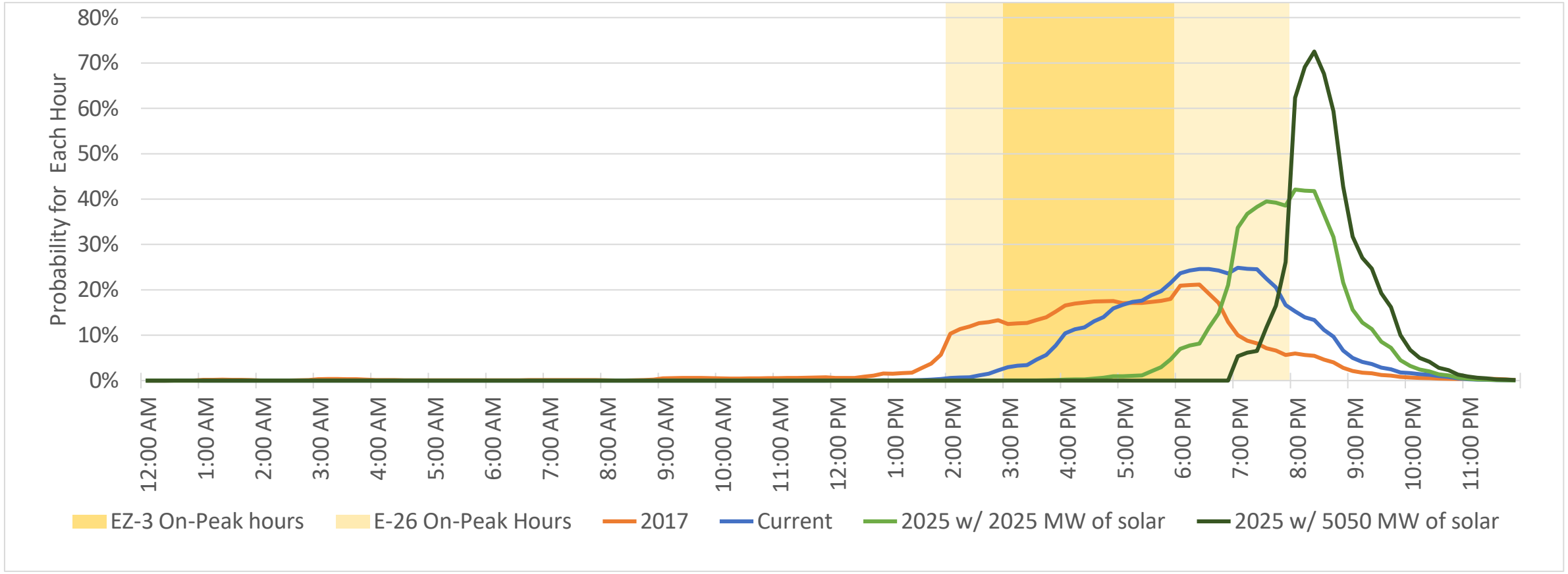
Current Market Price vs. Solar Production



FP22 Financial Plan (with 2025x2025 updates) – 2025 Projection

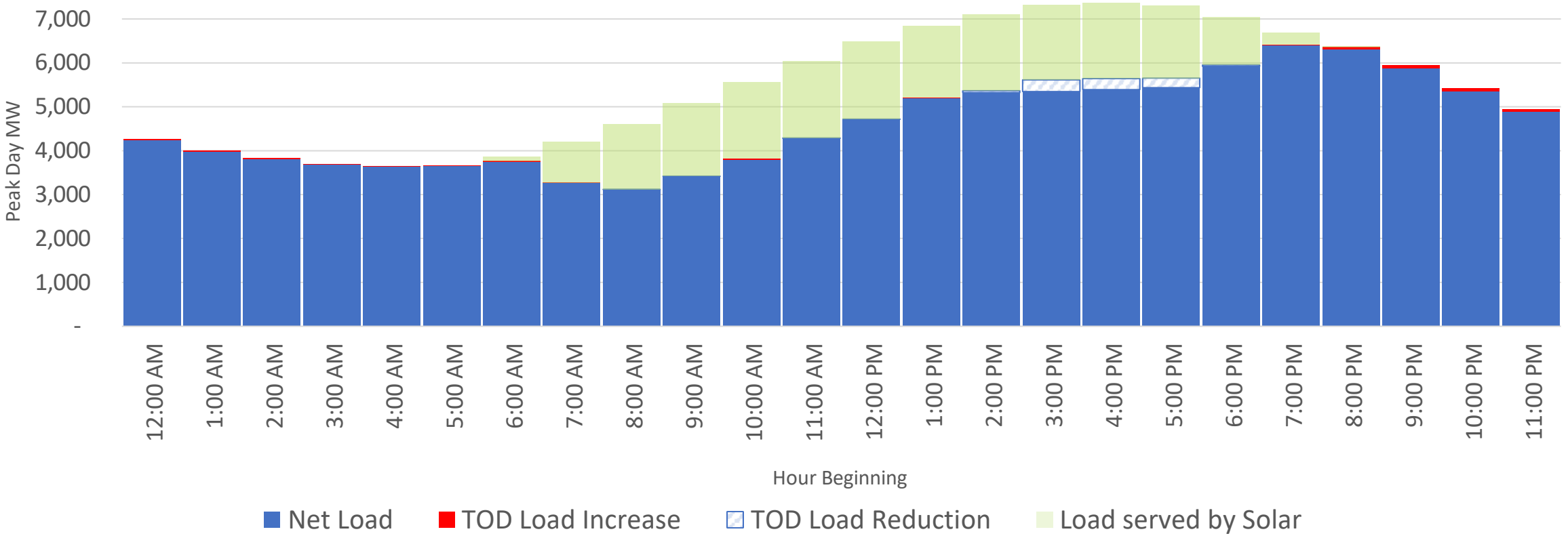


Loss of Load Probability (LOLP)



Note: Represents the hours in which a loss of load event are most likely to occur, given that there is an outage

Peak Day with 2,000 MW of Solar



Note: Model of 2019 summer hourly load with varying amounts of solar

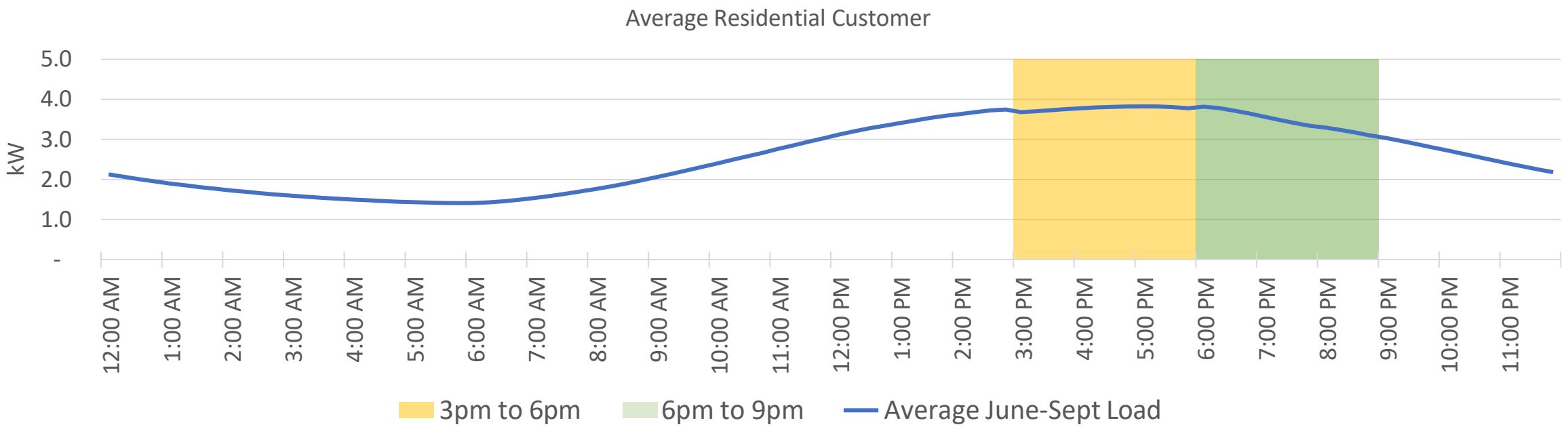
Preliminary Conclusions

- By 2025, EZ-3 and TOU programs will not be aligned with high-cost periods
- Programs will likely **increase** SRP's capacity requirements by around 45 MW
- With no changes, SRP's costs will be higher and there will not be savings to pass to customers

Future Hours and Additional Considerations

Bill Impact from TOU Changes

- Misconception: Customers will pay more with longer or more difficult on-peak hours
- Reality: The average bill impact will be 0%. For the average customer, we'll design new rates to be revenue neutral with old rates



TOU Programs will Likely Need to Start Later

E-26: 2pm-8pm

2,025 MW of Solar - % of LOLH Covered with TOU Period Beginning at:

	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
6 Hour	52%	88%	98%	99%	97%	86%	48%	12%	2%
5 Hour	14%	52%	88%	97%	97%	86%	48%	12%	2%
4 Hour	3%	14%	52%	87%	95%	85%	48%	12%	2%
3 Hour	1%	3%	14%	52%	85%	84%	48%	12%	2%

EZ-3: 3pm-6pm

6pm-9pm on-peak period

5,050 MW of Solar - % of LOLH Covered with TOU Period Beginning at:

	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
6 Hour	12%	74%	96%	100%	100%	100%	88%	26%	4%
5 Hour	0%	12%	74%	96%	100%	100%	88%	26%	4%
4 Hour	0%	0%	12%	74%	96%	100%	88%	26%	4%
3 Hour	0%	0%	0%	12%	74%	96%	88%	26%	4%

Note: These are results of one LOLH study; further analysis and studies will be needed before Management brings a recommendation to the board

What Future TOU Might Look Like

Potential Hours (just for discussion, actual hours to be determined):

- E26 – 5 to 10 pm on peak and 8 to 4pm super off peak
- E21 – 6 to 9 pm on peak and 9 to 3 pm super off peak

Significant changes for customer operations and marketing/communications

Questions

- What approaches might we take to mitigate concerns?
- What opportunities might there be in the change?
- Do we need more than one time-of-use rate?
- Do we design to 2025 needs or to 2030s needs?

New Opportunities

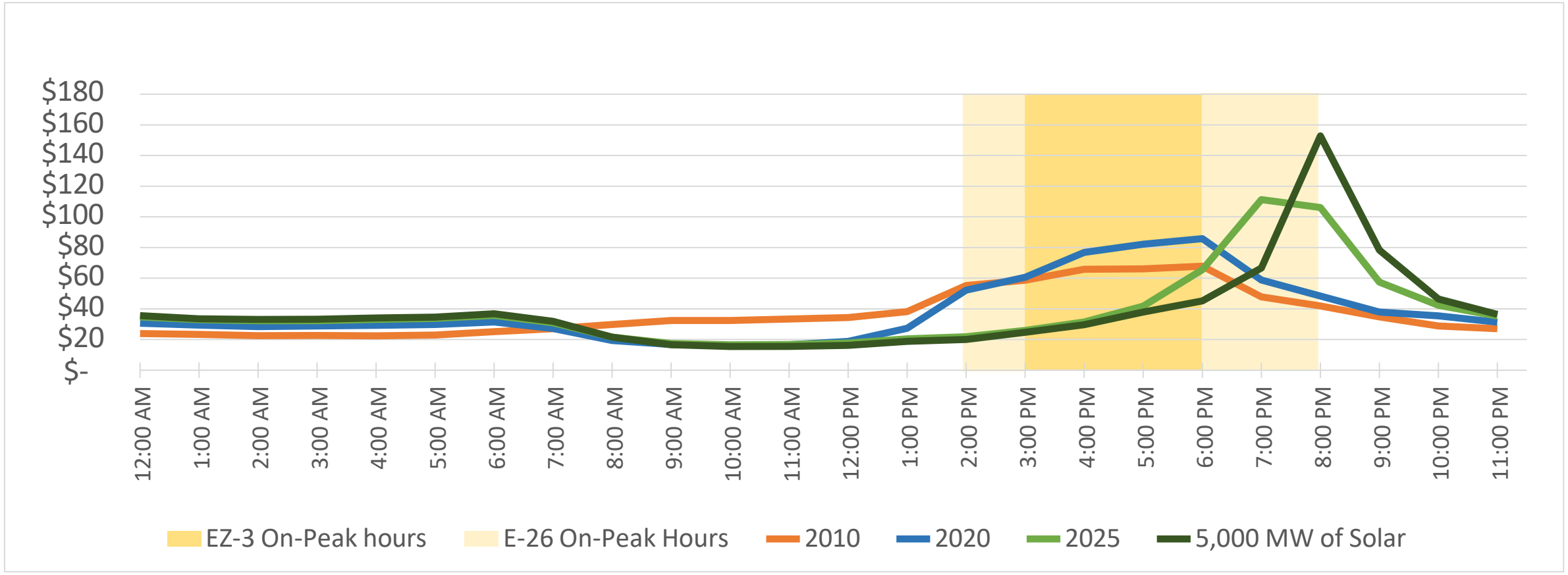
- Customers could take advantage of lower costs during the middle of the day if we introduce a super-off-peak period
- Increase engagement of time-of-use programs by appealing to environmentally-conscious customers instead of just cost-conscious customers
    - Increasing or shifting load to super-off-peak hours will help integrate more solar onto the grid and increase solar hosting capacity
    - May reduce future curtailed solar
- Possible change of communications around time-of-use, it is no longer just about saving money:
    - “Precool your home with low-cost solar”
    - “Charge your EV with the Sun”

Additional Considerations

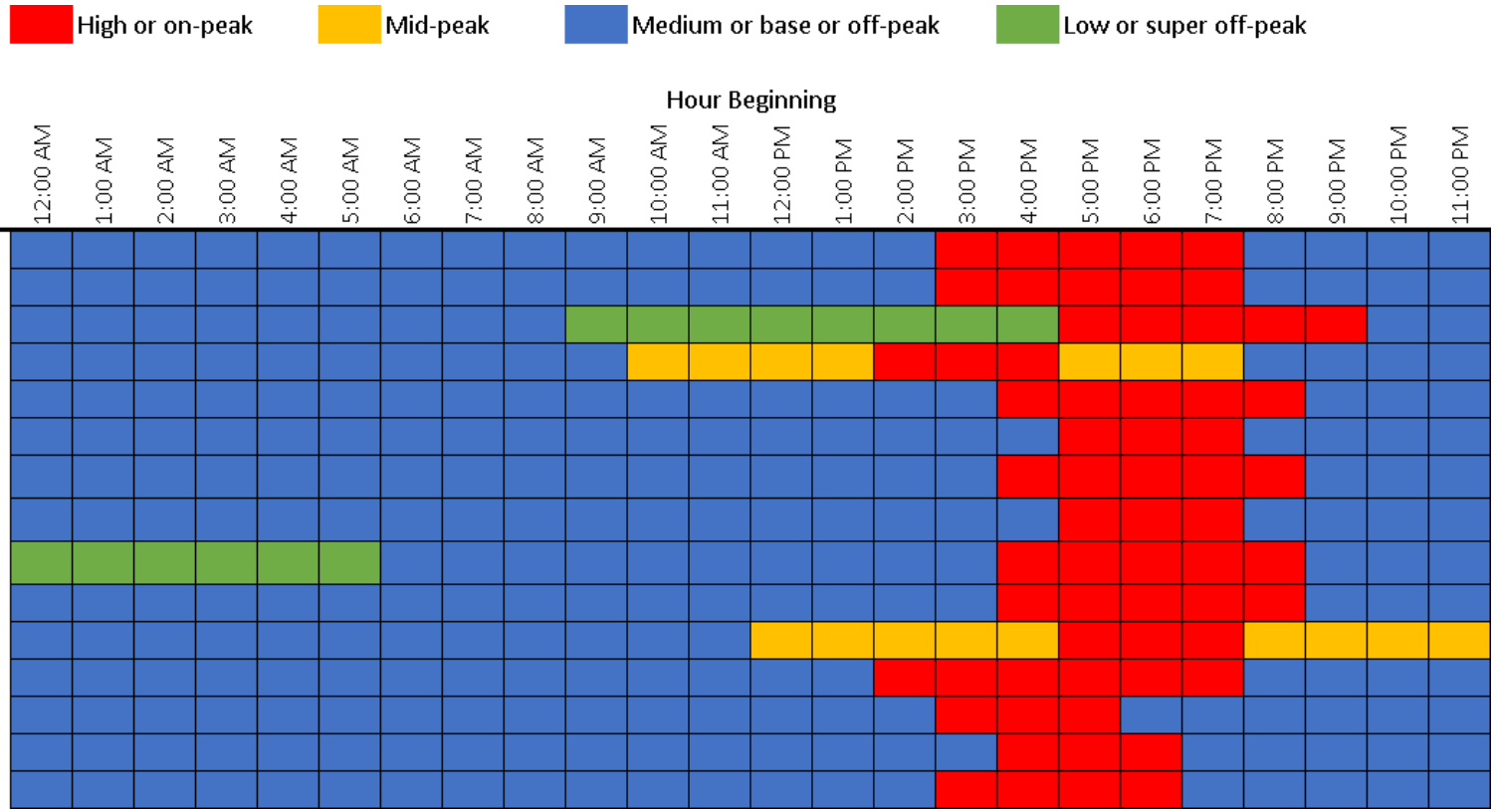
- On-peak weekends
- Holidays
- Elimination of on-peak period during off-peak season
- 4-month on-peak season / 8-month off-peak season (vs. Current 4/2/6 season split)
- The number of TOU program offerings
- Staggering on/off-peak start times (for operational reasons)
- Super off-peak period in Basic Plan
- Possible rebranding (find most customer intuitive way to communicate peak concepts)

thank you!

Changing Marginal Cost (Estimated)



Summer Hours for Utilities with Significant Solar



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APS	Saver Choice Max/Plus/Tech	Yes	Yes	Summer
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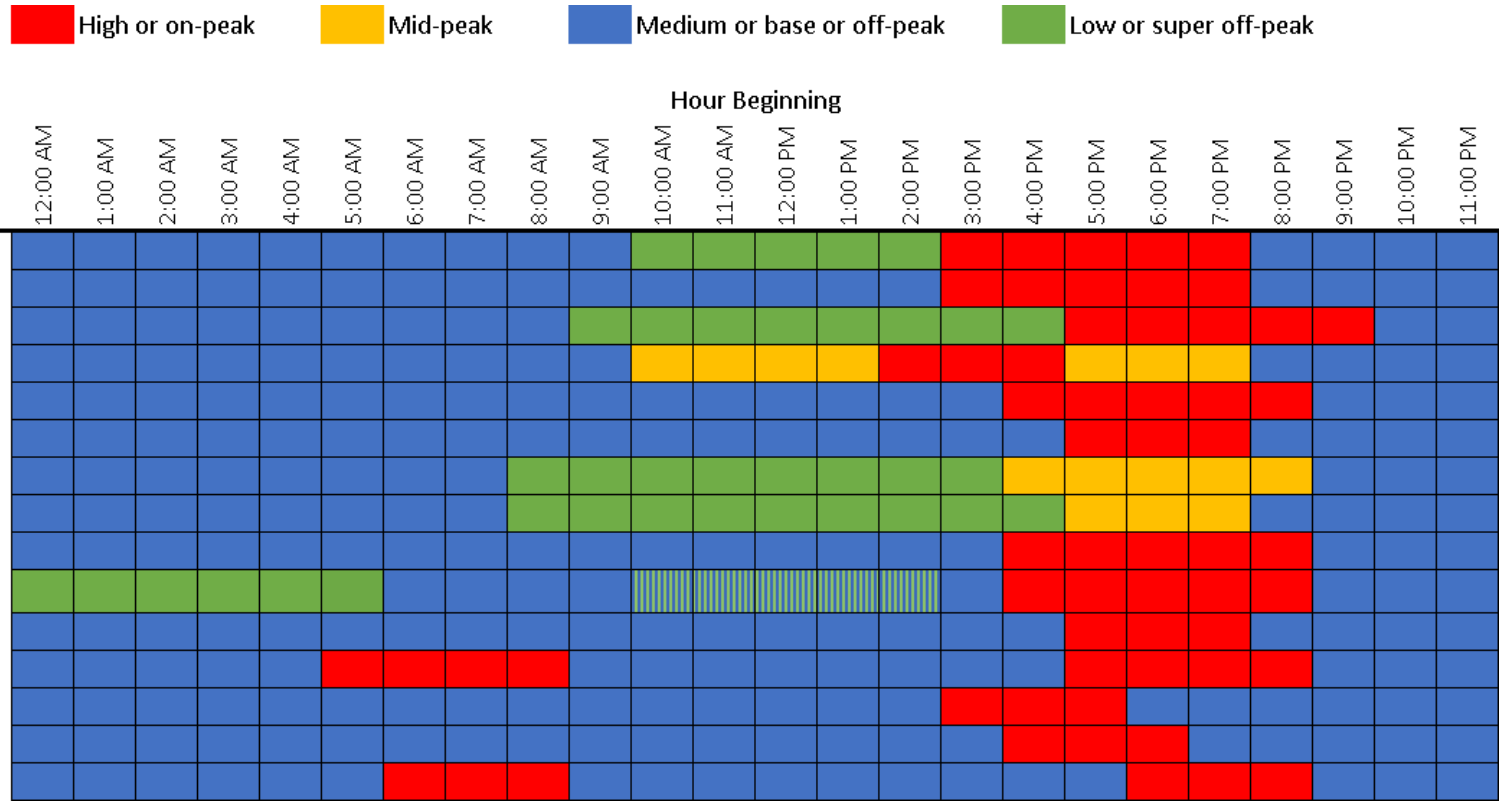
PG&E	E-TOU-C	No	No	Summer
PG&E	E-TOU-D	Yes	Yes	Summer
SCE	TOU-D-4-9PM	No[1]	No	Summer
SCE	TOU-D-5-8PM	No[1]	No	Summer
SDG&E	TOU DR-1	No[2]	No	Summer
SDG&E	TOU DR-2	No	No	Summer
SMUD	Time-of-Day (5-8pm)	Yes	Yes	Summer
SRP	E-26 (TOU)	Yes	Yes	Summer
SRP	E-21 (EZ-3)	Yes	Yes	Summer
SRP	E-22 (EZ-3)	Yes	Yes	Summer
TEP	Residential service Time-of-Use	Yes	Yes	Summer

[1] Weekends are mid-peak
[2] Weekend off-peak 2pm to 4pm and 9pm to 12am; super-off peak from 12am to 2pm; on-peak from 4pm to 9pm

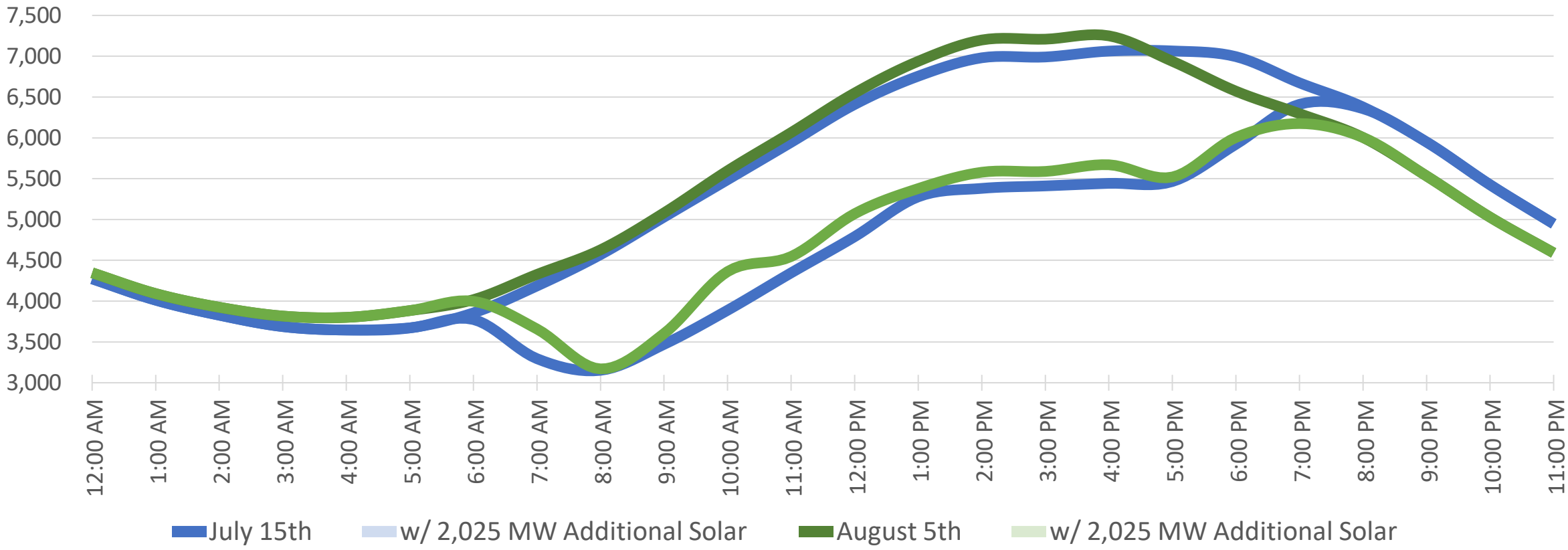
Winter Hours for Utilities with Significant Solar



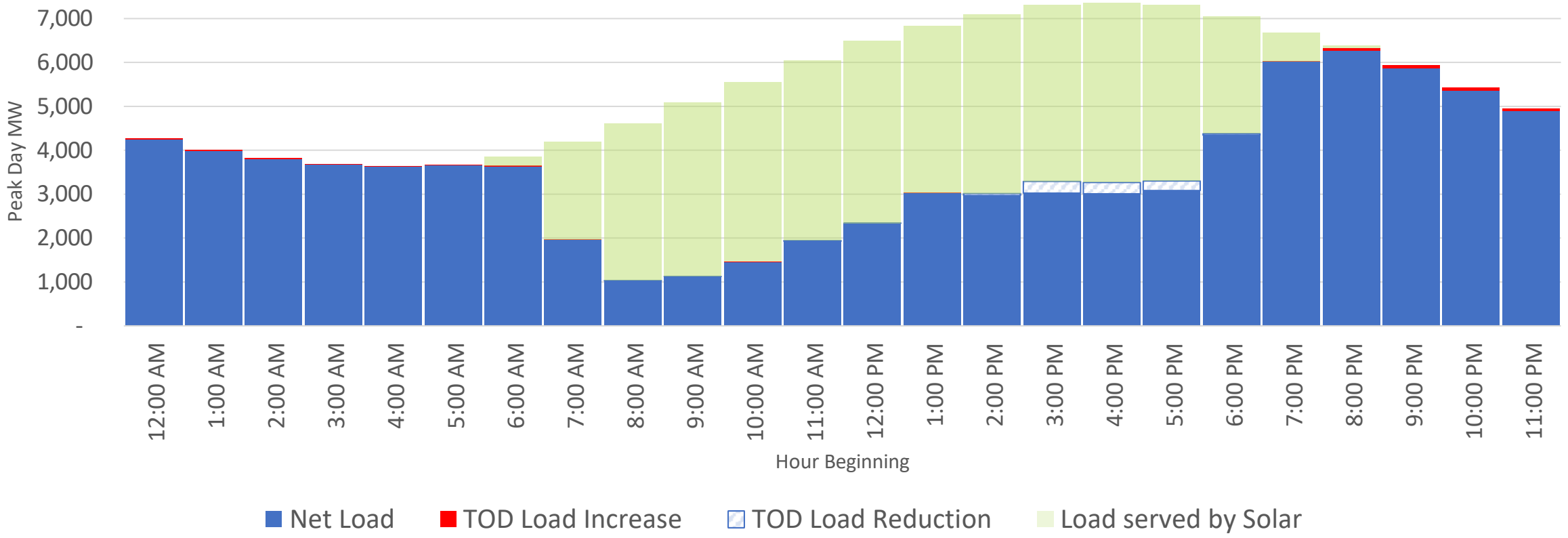
Utility	Rate Name	Weekends off-peak	Select Holidays off-peak	Season
APS	Saver Choice	Yes	Yes	Winter
APS	Saver Choice Max/Plus/Tech	Yes	Yes	Winter
HECO	TOU-RI (Interim Rate)	No	No	Winter
LADWP	Time-of-Use Residential Rate	Yes	No	Winter
PG&E	E-TOU-C	No	No	Winter
PG&E	E-TOU-D	Yes	Yes	Winter
SCE	TOU-D-4-9PM	No	No	Winter
SCE	TOU-D-5-8PM	No	No	Winter
SDG&E	TOU DR-2	No	No	Winter
SDG&E	TOU DR-1	No	No	Winter[3]
SMUD	Time-of-Day (5-8pm)	Yes	Yes	Winter
SRP	E-26 (TOU)	Yes	Yes	Winter
SRP	E-21 (EZ-3)	Yes	Yes	Winter
SRP	E-22 (EZ-3)	Yes	Yes	Winter
TEP	Residential service Time-of-Use	Yes	Yes	Winter

[3] In March and April 10am to 2pm is super off-peak other winter months it is off-peak

The Peak Day Moves with Additional Solar

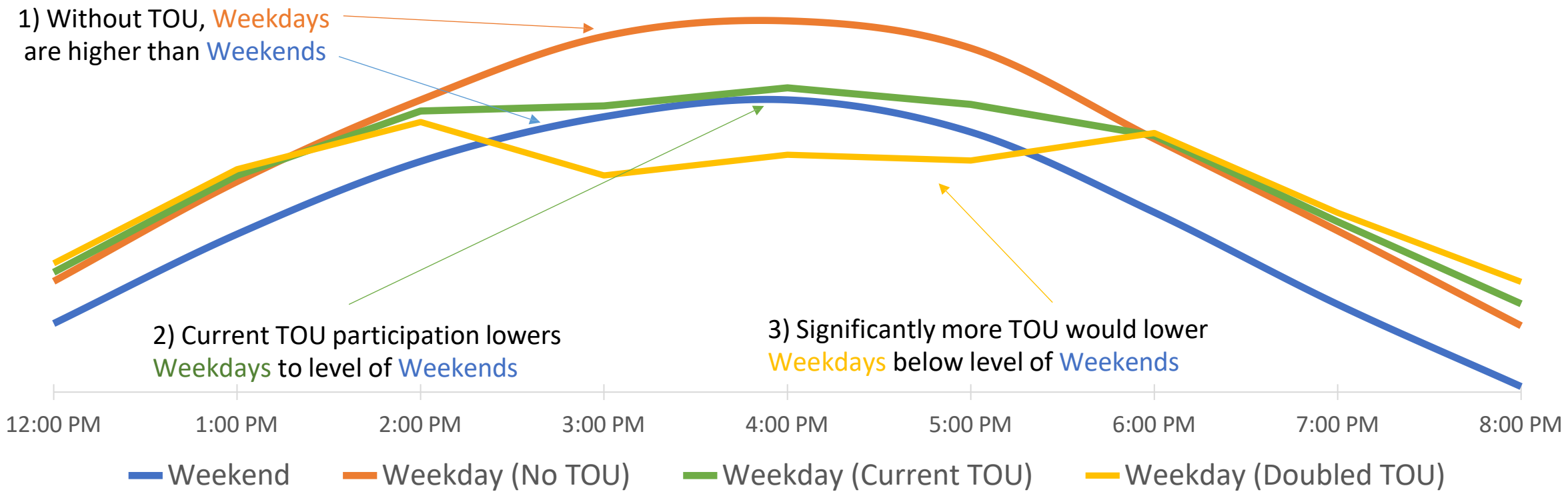


Peak Day with 5,000 MW of Solar

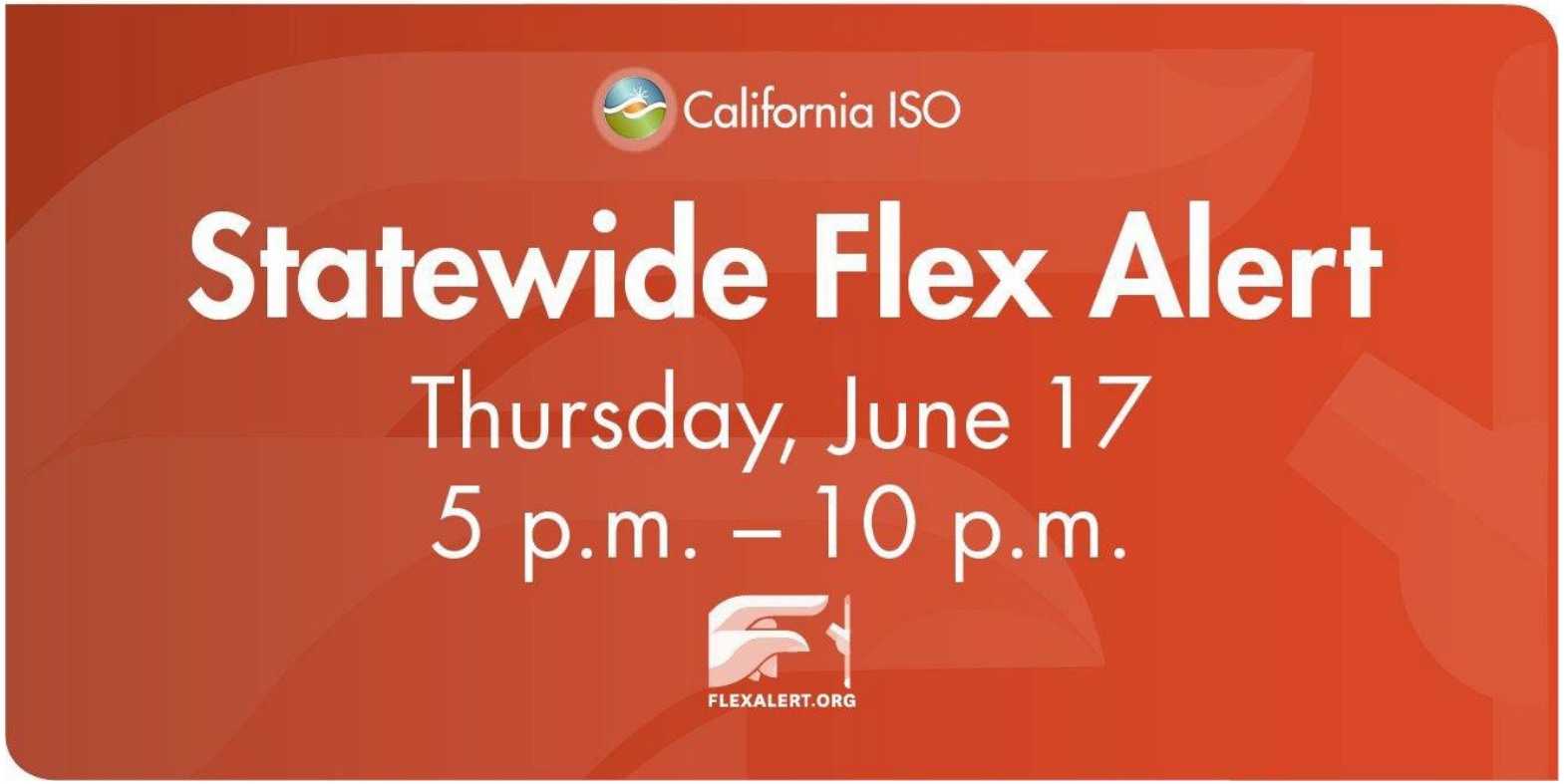


Note: Model of 2019 summer hourly load with varying amounts of solar

Peak Load with and without TOU Programs



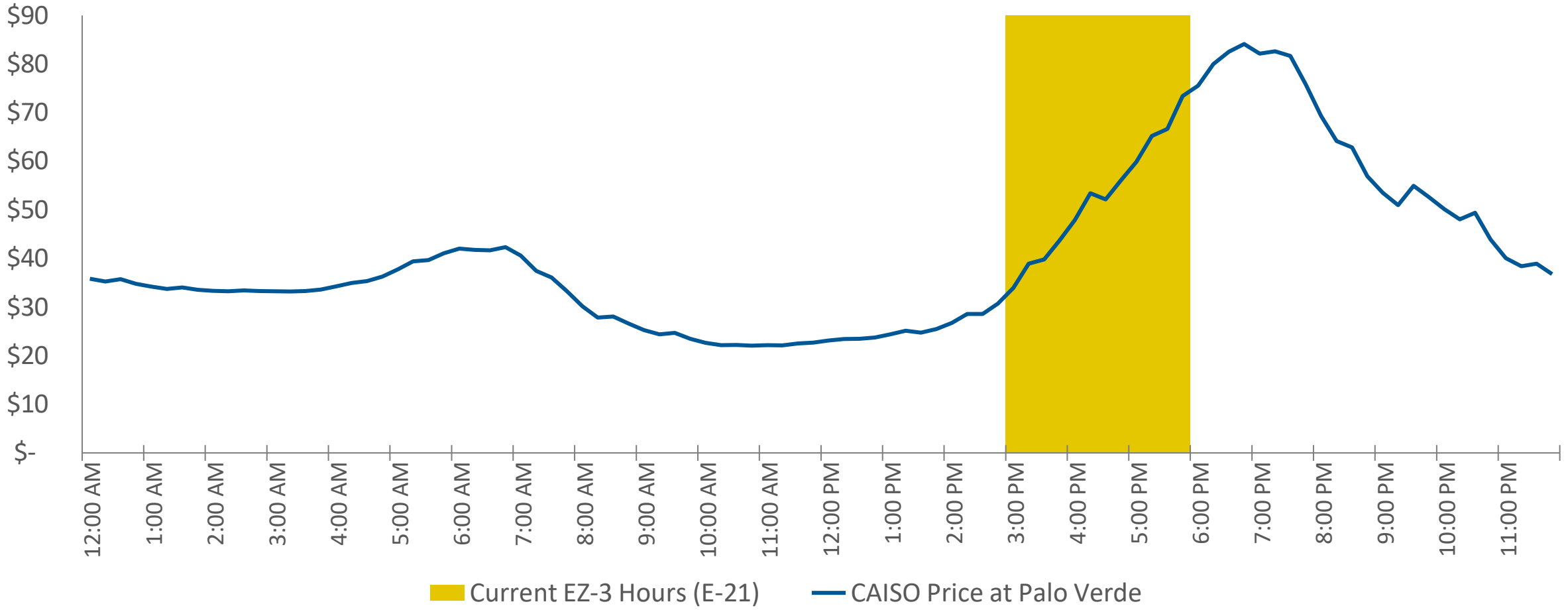
Later Critical Hours are a Regional Concern



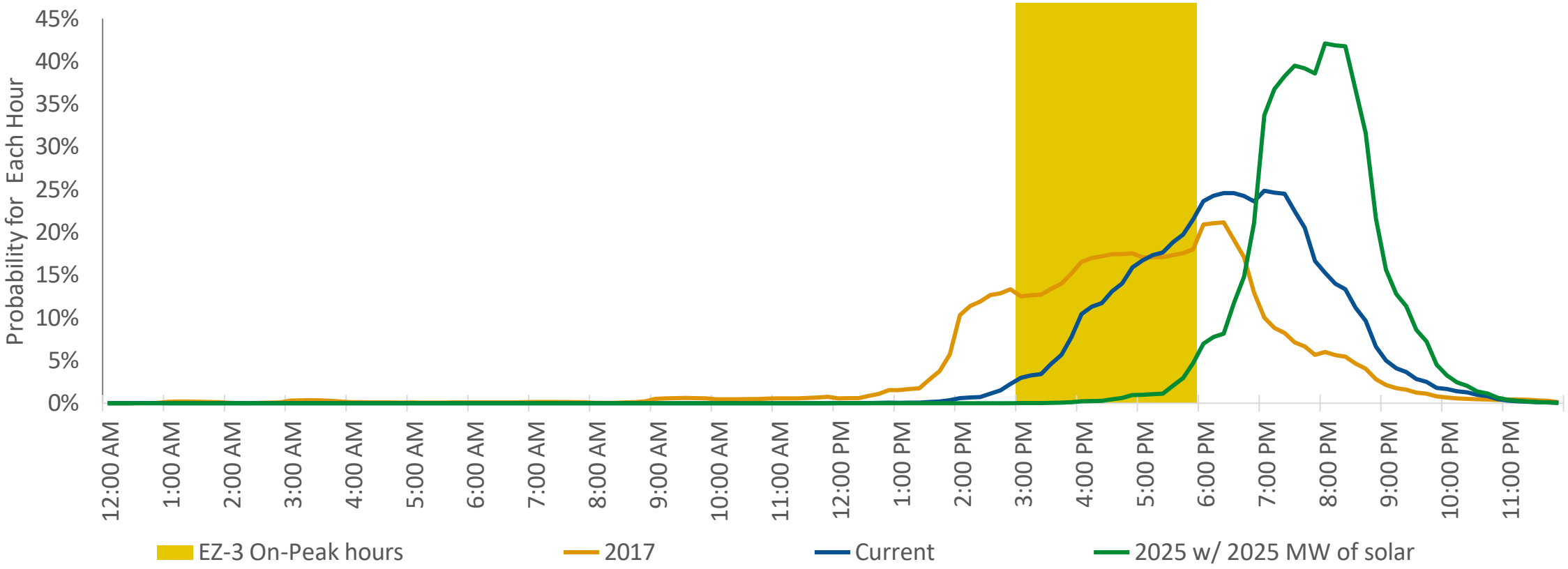
Proposed Residential Time-of-day Pilot Price Plan

Adam Peterson| November 17, 2022

Shifting Energy Prices



Loss of Load Probability



Note: Represents the hours in which a loss of load event are most likely to occur, given that there is an outage

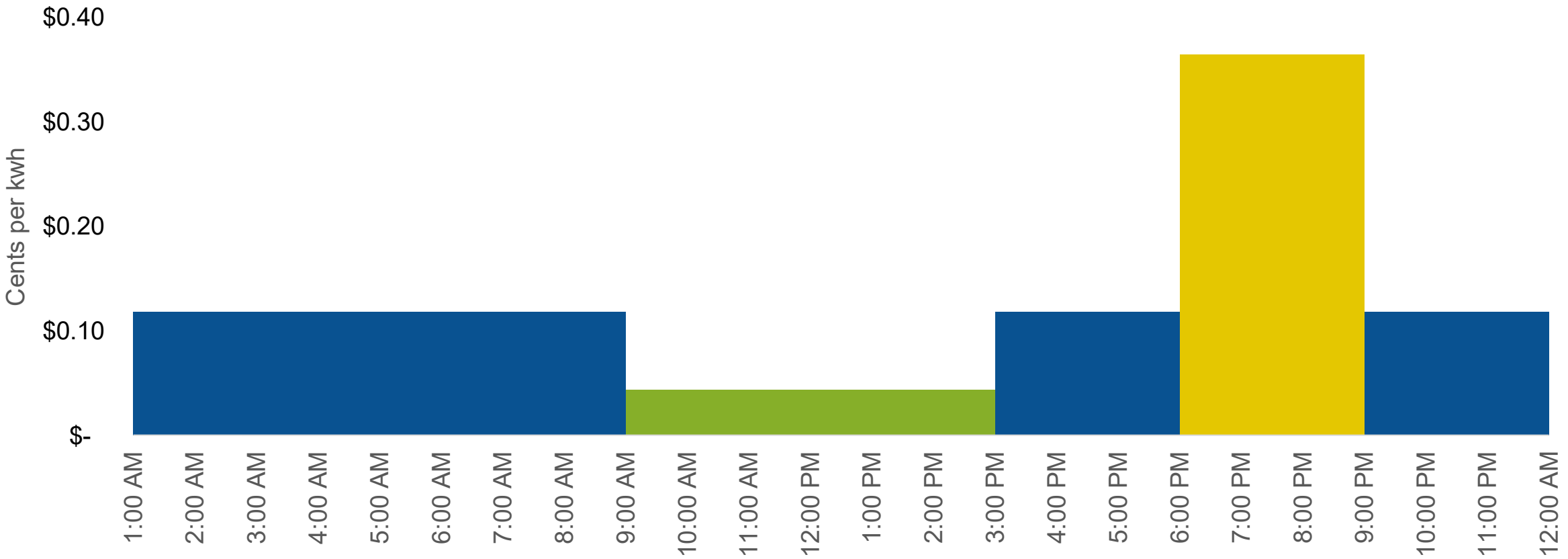
Time-of-day (TOD) Pilot Price Plan Opportunity

- Align TOD super-off-peak hours with low-cost and low-carbon hours
  - Time-of-day Pilot Price Plan can help customers save money and make energy use more sustainable
- Shift on-peak hours to later in the evening to match higher costs in the evening as a result of an evolving grid

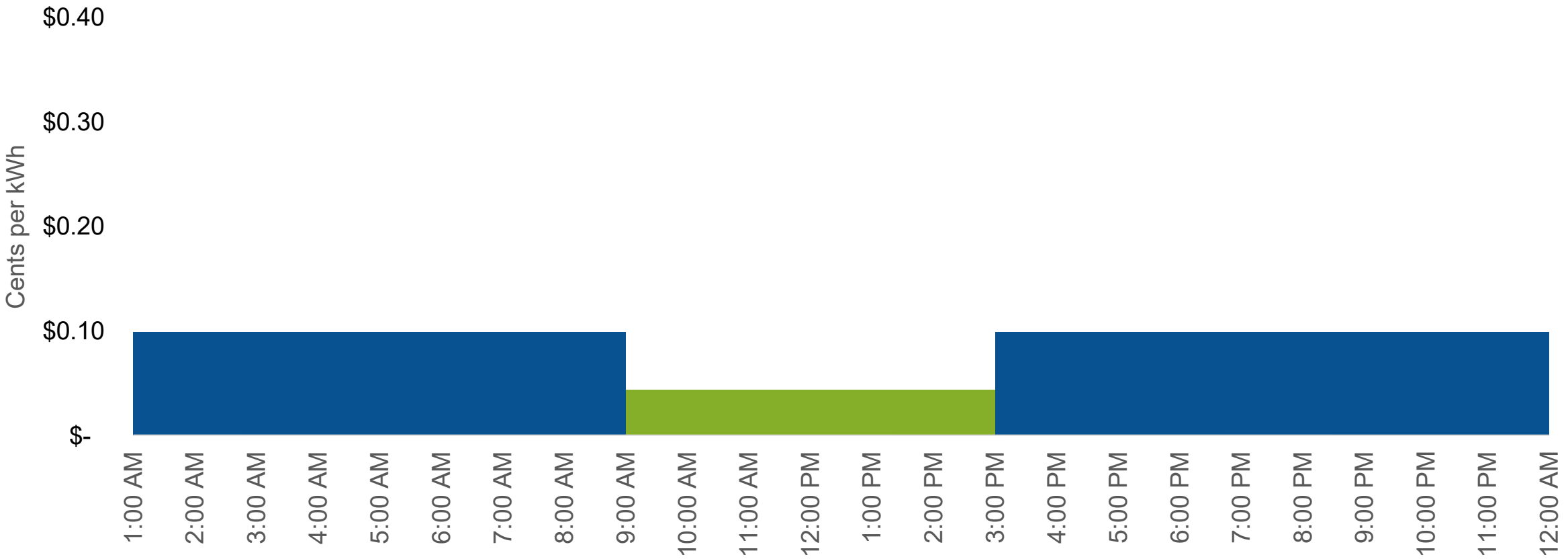
Benefits of Pilot Approach

- Research opportunity to inform future TOD hours before establishing a standard price plan
  - Discover what drives interest and adoption of the price plan
  - Learn how customers change behaviors in response to various price signals
    - Test the effectiveness of communications and mechanisms
  - Understand impact to customer segments, EV owners, legacy EZ3/TOU participants, etc.
  - Discover barriers to participation and compliance to inform marketing and communications
  - Identify profile of customers and size of market, if a standard price plan is offered
  - Identify unforeseen challenges and mitigate risks by limiting participation
  - Evaluate overall customer satisfaction & customer experience impacts

Proposed May 1 – October 31 Hours



Proposed November 1 – April 30 Hours



Time-of-day Pilot Price Plan Prices

Season	On-Peak (6 – 9 PM, Weekdays Only)	Off-Peak	Super Off-Peak (9 AM – 3 PM, Everyday)
Summer	$0.3572	$0.1096	$0.0433
Summer Peak	$0.3637	$0.1180	$0.0433
Winter	$0.3463	$0.0987	$0.0433

* Winter on-peak price will only apply to usage during October that is included with the November billing cycle.

Pilot Details

- An initial 1,000 customers will be by SRP recruitment only
    - Manual billing requirements inform the size of the initial pilot group
    - Participation cap of 2,000 customers to allow for future flexibility, if conditions allow
- Open to new customers until May 2026, unless sooner terminated
- Effective as of the March 2023 bill cycle
- Titled “E-28 Pilot Price Plan for Residential Time-of-Day Service with Super Off-Peak Hours”

Recommendation

In accordance with the terms discussed herein and set forth on the accompanying pilot price plan sheet, request that the Committee recommend that the Board approve the E-28 Pilot Price Plan for Residential Time-of-Day Service with Super Off-Peak Hours.

thank you!