

# Standby Rates for Customer Generation

Overview of NV Energy Standby and Net Metering Riders

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Economic Analysis

## Customer Generation Tariffs

- ▶ Retail Tariffs for Customers with Generators
  - Net Metering Rider (NMR)
  - Standby Riders
    - Large Standby Rider [LSR]
    - Small Standby Rider [SSR]
- ▶ Riders
  - Work in conjunction with the “otherwise applicable rate schedule” (OARS)
  - OARS is the rate schedule that would be applicable absent the customer’s generator



## Net Metering Rider

### Key Elements of Net Metered Service

- ▶ Generating capacity up to 1 MW
- ▶ Uses renewable energy (as defined by NRS 704.7811)
  - sun/solar (photovoltaic or PV)
  - wind
  - biomass
  - geothermal
  - water (hydro-generation)
- ▶ Generator must be located on customer's premise (directly serves the load)
- ▶ Generator capacity cannot exceed the greater of
  - The limit of demand for the applicable rate class
  - 100% of customer's annual generation requirements



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## Net Metering Credits

- ▶ For generated energy (kWh's) not consumed by customer
  - Banked – No direct payment
  - Full amount per kWh, BTER and BTGR
  - Can be carried forward and applied as an energy credit to like time-of-use (TOU) periods on future bills
  - Carried forward credits do not expire until used to offset customers kWh load



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## Net Metering Subsidy

- ▶ Subsidy is greater for rate classes that do not have Demand or Facilities charges
  - Residential
  - Small Commercial
- ▶ By granting the full \$/kWh for all generation not directly consumed, there is no recovery of distribution, transmission, and generation capacity unless it is separately recovered in demand charges.
  - Net Metering customers are subsidized for capacity costs related to Primary Distribution, Transmission & Generation



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## Factors Affecting NMR Bill Savings

- ▶ Ability to use energy credits in same TOU period for future bills
- ▶ For commercial customers that pay kilowatt (kW) based Facilities and Demand Charges
  - With generation that is intermittent or off-line during on-peak or mid-peak periods, generation may not fully offset Demand and Facilities Charges.

*PV generation does not generate when the sun goes down and the on peak period extends into the evening.*

	<u>SPPC(weekday)</u>	<u>NPC</u>
Summer On-peak:	1-6 PM	1-7PM
Summer Mid-peak	10AM-1PM/6-9PM	10AM-1PM 7-10PM



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## Standby Tariffs

### Sierra Pacific Power Company's Standby Rate Schedules:

- ▶ **Large Standby Rider**
  - Applies to the following rate classes:
    - GS-2-TOU (500-1000 kW)
    - GS-3 (> = 1000 kW)
    - GS4 (> = 5000 kW, > = 85% Load Factor)
- ▶ **Small Standby Rider**
  - Applies to the following rate classes:
    - Residential
    - GS-1 (< 50 kW and < 10,000 kWh)
    - GS-2 (50-500 kW, or > = 10,000 kWh)
- ▶ **Generator must be located on customer's premise**



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## Nature of Standby Service

- ▶ Standby Customers are **Partial Requirements**  
Customers who rely
  - "partially" on the Utility
  - "partially" on their own generation

*In contrast to -*

- ▶ **Full Requirement** customers
  - served under the Utility's OARS

### For Partial Requirements Customers:

- Utility needs to be able to serve Standby Load at any time with no advance notice
- Utility must invest in and maintain facilities
  - Primary Distribution & Transmission lines
  - Generation Capacity



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## Standby Customers

- ▶ Most Standby customers are merchant plants selling energy to NV Energy or to the market
  - The Utility "stands by" to serve their station service load whenever their generation is down and/or to provide black start.
- ▶ For customers with generation serving their own host load requirements
  - Utility stands by to provide load when their generator is not able to supply the load at expected levels or is down entirely
  - Utility provides Supplemental Power
    - Load for which customer-owned generator is not designed to serve
    - Customer pays normal OARS charges for this load
- ▶ Standby Riders are not applicable to
  - Customers qualifying for & electing Net Metering service (NMR)
  - Distribution Only Service (DOS)
  - Emergency Generators maintained solely for use in case of interruption of Utility Service (Break before Make)



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## Why Standby Charges are Necessary

- ▶ The Standby rider tariffs (SSR III and above) are designed to:
  - Recover Utility costs of demand-related facilities that are standing by to serve Standby Load
    - Transmission capacity
    - Generation capacity
  - T&G Demand Charges are based on customers kW demand in each TOU period
  - Only Reservation charges apply if a customer's generator runs at full output and serves the customers entire load throughout the billing period



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## How Standby Tariffs are Designed

**Demand Charges are designed to recover demand-related costs required to serve Standby load.**

- ▶ Standby Rider splits OARS Demand Charge into two parts to recognize the diversity of generator availability:
  - Reservation Charge
    - Fixed Component. Paid every billing period, even if Demand is zero
    - Covers generation and transmission facilities that are standing by to serve Standby customers load requirements during unplanned outage, or reduced generation
  - Backup Demand Charge
    - Charged on actual customer demand imposed on the system
    - If demand during the billing period (for corresponding TOU period) is zero, then the Backup Demand for that period is zero
    - Backup Demand charge is reduced if the number of hours of an unplanned outage is of short duration (FOF).
- Some Generation Demand related costs also flow into the kWh charges and are avoided by Stand-by customers.



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## Diversity of Standby Loads Determine the Percent Split of OARS Demand Charge

- ▶ Not all standby customers are expected to “lean” on the Utility at the same time
  - Standby customer’s generators will NOT all simultaneously be down, or running at lower capacity
- ▶ Diversity Factor
  - Based on coincident peak of all Standby generators
  - Used to split the OARS Demand Charge into two pieces to reflect something less than the full capacity requirement in light of the fact that not all generators will be unavailable at the same time.



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## Diversity Factor

The demand charge is broken into Reservation (Contract kW) & Back-up (Actual back-up demand) charges.

$$\text{Diversity Factor} \times \text{OARS Demand Charge} = \text{Reservation Charge}$$

### Diversity Factors

- Sierra Power: 39%
- Nevada Power: 19%



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## Reservation Plus Backup Demand Charges Equal OARS Demand Charge

Example: Sierra GS-3 (applicability is  $\geq 1000$  kW)

Per kW Rate	Peak	Mid Peak
Reservation Charge	\$2.89	\$1.19
Backup Demand Charge	\$4.51	\$1.86
OARS Demand Charge	\$7.40	\$3.05



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## OARS Demand Charges

- ▶ G&T TOU Demand Charges are set in each GRC using marginal cost
- ▶ Generation capacity costs are based on marginal generation cost and allocated to all hours of the year based on Loss of Load Probabilities (LOLPs)
- ▶ Transmission capacity costs are based on a marginal transmission cost and allocated to all hours based on Probability of Peak (POP)
- ▶ Hourly class loads for each class are used to develop the class marginal G&T costs.
  - Classes with higher loads in periods of higher demand and higher responsibility factors are allocated a higher relative portion of marginal G&T costs.
- ▶ As part of the rate design, Marginal G&T demand/capacity costs are reconciled (scaled) to the corresponding revenue requirement.
  - A portion of G&T demand costs (40-60%) are recovered through TOU Demand Charges
  - The rest are recovered through the TOU energy (\$/kWh) charges for each class.



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## Contract Demand

- ▶ Contract Demand is an appropriate amount of capacity that the Utility agrees to make available when the Customer's generator(s) experiences an unplanned outage, or reduces its generation.
- ▶ Standby customers pay a monthly Reservation Charge for the designated Contract Demand.
- ▶ If a customer's load exceeds Contract Demand, the customer will pay for all demand imposed.
  - The Reservation and Backup demand charges for demand up to the Contract Demand and the OARS Demand charge applied to the Supplemental demand.
  - A higher Contract Demand will be set going forward
- ▶ Back billing for up to 12 months at new Contract Demand may be applied.



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## Key Standby Billing Determinants

- ▶ Reservation Charge kW = Contract Demand kW
- ▶ Backup Demand Charge kW
  - Backup Demand is based on experienced demand – how much the customer “leans” on utility during each period.
  - Backup Demand kW during each TOU period equals
    - Contract Demand kW
    - minus minimum kW generated during the period
- ▶ Supplemental Demand Charge kW
  - kW of load served by Utility > Contract Demand kW, or
  - kW of load served by Utility for load greater than what the customer’s generator was designed to serve.



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## Factors Influencing Standby Bills

- ▶ The fixed Reservation Charge is never avoided.
- ▶ If Standby Generator serves no load during some hours during the billing period then Backup Demand charge will be assessed.
- ▶ 20% adder to energy supplied by utility if
  - generator is operating at less than 70% capacity factor during peak period
- ▶ Discount on Back-up Demand Charges (FOF)
  - if unplanned outage or reduced generation is less than 8 hours per month.
- ▶ Standby Bills and OARS bills will generally be equivalent when the Standby generator uses Backup Demand up to the level set by the Contract Demand



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## Bill Comparisons – 4 Cases

1) Full Requirements Customer (GS-3)

Partial Requirements Customer (LSRII/GS-3):

2) Merchant Generator – selling energy, no host load

3) Host Load Generator serving own load 70% of the time

4) Same Host Load Generator billed under OARS (Assuming no Standby Schedule)



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## Bill Comparisons – Assumptions

- ▶ Generator Capacity: 5,000 kW
- ▶ Maximum demand in all periods: 5000 kW
- ▶ Contract Demand
  - Merchant Generator: 1000 kW (Needed to restart generator)
  - Host Load Generator: 5000 kW (Needed to serve host load when generator down)
- ▶ Generator Capacity Factor (Percent of time generating)
  - Merchant Generator: 100%
  - Host Load Generator: 70% (Down during portions of On-peak & Mid-peak periods)
- ▶ Demand (kW) Served by Utility
  - Merchant Generator: 0%
  - Host Load Generator: 30%
- ▶ Energy (kWh) Served by Utility
  - Merchant Generator: 0%
  - Host Load Generator: 30%
- ▶ Monthly Bill in Summer Season; Utility is Sierra



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# Bill Comparisons – Key Bill Components

## Comparison of Standby and OARS Customers Sierra GS-3

	Customer 1 No Standby	Customer 2 Generator running at 100% Capacity Factor	Customer 3 Generator running intermittently, 70% Capacity Factor	Customer 3 IF BILLED UNDER OARS
<b>Key Parts of Bills</b>				
<b>Bill Components</b>	<b>Standby and GS-3 Rate</b>			
<b>Reservation Charge</b>		n/a		
Peak	2.89	n/a	2,890	14,450 n/a
Mid Peak	1.19	n/a	1,190	5,950 n/a
<b>Backup Demand Charge</b>		n/a		
Peak	\$ 4.51	n/a	-	22,550 n/a
Mid Peak	\$ 1.86	n/a	-	9,300 n/a
<b>OARS Demand Charge for Case 3)</b>				
Peak	\$ 7.40	37,000	-	- 37,000
Mid Peak	\$ 3.05	15,250	-	- 15,250
<b>Facilities Charge</b>	\$ 7.11	\$ 35,550	\$ 7,110	\$ 35,550 \$ 35,550
<b>Energy</b>				
Peak	\$ 0.11202	\$ 86,816	\$ -	\$ 26,045 \$ 26,045
Mid Peak	\$ 0.08360	\$ 77,748	\$ -	\$ 23,324 \$ 23,324
Off Peak	\$ 0.05731	\$ 115,480	\$ -	\$ 34,644 \$ 34,644
<b>Total</b>		<b>367,843</b>	<b>11,190</b>	<b>171,813 171,813</b>

