

TACOMA POWER

2022 Clean Energy Implementation Plan



TACOMA  **POWER**
TACOMA PUBLIC UTILITIES



RESOLUTION NO. U-11296

1 A RESOLUTION authorizing the approval and adoption of Tacoma Power's
2 2022 Clean Energy Implementation Plan.

3 WHEREAS the City of Tacoma, Department of Public Utilities, Light
4 Division (d.b.a "Tacoma Power") is requesting the approval and adoption of the
5 2022 Clean Energy Implementation Plan, as required by the Clean Energy
6 Transformation Act ("CETA"), Chapter 19.405 RCW, and

7 WHEREAS in 2019, CETA was adopted and the state of Washington
8 committed to a retail electricity supply comprised of a hundred percent
9 renewal and nonemitting resources by 2045, and
10

11 WHEREAS the landmark law imposes clean energy mandates on
12 electric utilities in Washington as well as planning and reporting requirements,
13 and
14

15 WHEREAS one of the requirements is that utilities compete a Clean
16 Energy Implementation Plan ("CEIP") by January 1, 2022, and every four years
17 thereafter, and

18 WHEREAS the CEIP is a planning document to make sure that utilities
19 are prepared to meet CETA's clean energy requirements, and
20

21 WHEREAS Tacoma Power held two public meetings to obtain input on
22 the draft plan, has made all components of the CEIP available online to the
23 public for questions and comments, and the public has been provided an
24 opportunity to give public comment to the Public Utility Board on the draft plan,
25 Now, therefore,
26



1 BE IT RESOLVED BY THE PUBLIC UTILITY BOARD OF THE CITY OF TACOMA:

2 That the Public Utility Board of the City of Tacoma hereby authorizes the
3 approval and adoption of Tacoma Power's 2022 Clean Energy Implementation
4 Plan.

5 Approved as to form:

6 /s/
7 Chief Deputy City Attorney

8 Charlene Jacobs
9 Clerk

Mark R. Patterson

Chair

Carlos Watson

Secretary

Adopted 12-15-21

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1 Background

In 2019, Governor Jay Inslee signed into law the Clean Energy Transformation Act (CETA), which commits the State of Washington to a retail electricity supply comprised of 100 percent renewable and nonemitting resources by 2045. The landmark law imposes new clean energy mandates on electric utilities in Washington as well as planning and reporting requirements. One of those new requirements is that utilities complete a Clean Energy Implementation Plan (CEIP) by January 1, 2022 and every four years thereafter. The CEIP is a planning document with the aim of making sure utilities are prepared to meet CETA's clean energy requirements. Our first-ever CEIP is due January 1, 2022 and every four years after that (in 2026, in 2030, etc.). In the CEIP, we must:

- (1) Establish targets for (a) how much of our customer's electricity consumption will come from renewable and nonemitting resources over the next four years and (b) the amount of energy efficiency¹, demand response and renewable energy we will acquire in the next four years.
- (2) Identify specific actions we will take to meet the above targets.
- (3) Identify specific actions to ensure an equitable transition.
- (4) Identify the resource adequacy standard and measurement metrics used to establish our targets.

2 Interim and specific targets

2.1 Interim target

In most years, we expect to have more than enough renewable and nonemitting energy to serve 100% of our load and expect our portfolio to be 96% to 97% carbon-free.²

However, we face substantial uncertainty regarding what we will report for CETA starting in 2030 due primarily to uncertainty regarding CETA rules for calculating the percentage of retail load served using renewable and nonemitting resources. The Department of Commerce has not yet finalized this aspect of CETA rulemaking. Because the only source of carbon in our portfolio comes from unspecified wholesale market purchases that we or BPA make to balance supply and demand, rules regarding the treatment of unspecified market purchases for operational

¹ For the purposes of the CEIP, we use the terms "conservation" and "energy efficiency" interchangeably.

² The 2020 IRP determined that, on average, 97% of our power supply is from renewable and nonemitting resources. We expect this number to drop to 96% in 2026 once our Columbia Basin Hydro contracts fully expire and hold steady at that percentage through 2045.

purposes are critical for us, as they are currently unavoidable³ and do not lend themselves to CETA's directive to demonstrate consistent progress towards meeting the 80 percent or 100 percent clean energy standards. Of particular importance are rules determining how purchases through organized markets will be treated under CETA. Once we join the California Energy Imbalance Market (EIM)⁴, it is likely that the volume of unspecified purchases we make will increase. If an organized day-ahead market also develops within the next four years, it is likely that we would join and see even more unspecified purchases enter our portfolio. It is vital that CETA rules and accounting approaches to address REC double counting be flexible enough to align with organized electricity markets. We believe that most stakeholders recognize that participation in regional electricity markets will deliver significant advantages to Washington electricity customers. These advantages are both financial (efficient dispatch) and environmental (facilitating renewable integration over a broad region and reducing renewable curtailment). In addition to uncertainty around CETA rulemaking, we have also seen growing policymaker interest in electrification of energy uses now served by fossil fuels (transportation, building heat, water heat, etc.). If our load grows more quickly than expected over the next four years, we may find we need to rely more on market purchases. We did not specifically model load growth due to electrification in our most recent (2020) IRP but will consider it in our 2022 IRP update.

Due to these uncertainties (particularly those around CETA rules), we set a slightly more conservative interim target of 90% renewable and nonemitting for this first CEIP. Even with this more conservative assumption, we expect to exceed the standard under RCW 19.405.040(1) (80% by 2030) for the period covered by this CEIP (2022-2025) and meet all CETA standards through 2044.

Currently, our portfolio mix is 90% renewable and 7% nonemitting (from nuclear generation included in the generation we purchase from BPA). We estimate our renewable and nonemitting targets by taking the current relative share of our portfolio that is renewable and nonemitting (92.8% and 7.2%, respectively) and multiplying this relative share by our 90% interim target. Table 8 shows the resulting breakdown of our targets for renewable and nonemitting resources.

³ As the Western grid gets cleaner and new clean fuel technologies develop that allow us to reduce our reliance on the grid, it is possible that one day in the future we will be able to avoid market purchases from carbon emitting sources entirely.

⁴ CAISO's EIM is not currently equipped to identify the source of generation that flows to each market participant.

Table 1: Percentage of retail load served by renewable and nonemitting resources

Resource:	2022	2023	2024	2025	4-year Period
Renewable	84%	84%	84%	84%	84%
Nonemitting	6%	6%	6%	6%	6%
Total	90%	90%	90%	90%	90%

2.2 Specific targets

Our specific targets for energy efficiency, demand response, and renewable energy over the 2022-2025 compliance period are in Table 2. The targets are informed by our 2020 Integrated Resource Plan (IRP), which calls for maintaining our current level of hydroelectric operations, renewing our contract with BPA in 2028, acquiring all cost-effective conservation identified in our Conservation Potential Assessment (CPA), and acquiring 10 MW of demand response by 2024.

Energy Efficiency: We plan to acquire 106,228 MWh (12.1 aMW) of energy efficiency over the 2022-2025 compliance period. We updated our conservation target from that used in the 2020 IRP to reflect the target identified in the 2022-2041 CPA. Each year's target is a pro rata share of the ten-year economic potential identified in our 2022-2041 CPA. We will update the CPA again in 2023, which may result in changes to the 2024 and 2025 targets.

Demand Response: We aim to acquire 10MW of demand response by the end of the 2022-2025 compliance period. Our DR target comes directly from the preferred portfolio identified in our 2020 IRP.

Renewable Energy: In each year of the 2022-2025 compliance period, we expect approximately 4.4 million MWh of our power supply to come from renewable energy in the form of hydroelectric generation. Our renewable energy target includes both our own hydroelectric generation and the hydroelectric generation we expect to purchase from BPA in an average year.

Table 2: Specific Targets for Energy Efficiency, Demand Response and Renewable Energy

Year	Energy Efficiency Target (MWh)	Demand Response Target (MW)	Renewable Energy Target (MWh)
2022	26,557	0	4,463,391
2023	26,557	0	4,440,359
2024	26,557	10	4,421,011
2025	26,557	0	4,408,107
Total	106,228	10	17,527,089

3 Specific actions to demonstrate progress

Our CEIP must identify the specific actions we will take during the next interim performance period to demonstrate progress toward meeting the CETA standards and the interim & specific targets in Section 2.

3.1 Specific actions to meet CETA standards

Because all of our generation comes from our own hydroelectric plants and our BPA contract, we expect to be able to comply with the CETA standards through at least 2044 by maintaining our current resource portfolio and do not need to take any additional actions to make progress toward meeting the carbon-neutral standard. Once the Department of Commerce has settled on rules for how CETA will treat market purchases for operational purposes and participation in organized markets and has defined in rule what in a utility's portfolio is used to serve load, we will be able to address CETA compliance post-2045.

3.2 Specific actions to meet interim & specific targets

3.2.1 Supply-side actions

Our 2020 IRP recommends renewal of our BPA contract in September 2028 but does not identify a need to acquire any supply-side resources over the 2022-2025 interim performance period. As such, we do not plan to take any specific supply-side actions over the next four years.

3.2.2 Demand-side actions

All of the specific actions we identify in this CEIP are demand-side actions. We identify three specific actions: one action related to energy efficiency and two actions related to demand response.

***Specific Action 1:** Acquire 106,228 MWh of energy conservation resources over the next four years through a combination of programs for our residential, commercial and industrial customers, as well as through some external programs.*

- **Residential conservation programs:** We have a variety of programs to help our residential customers make their homes comfortable and save money on their electric bills. Some of the key programs we plan to offer include insulation, windows and HVAC upgrades for electrically heated homes, incentives on efficient equipment and custom upgrade projects for homes with needs that fall outside of our standard programs. To help those most in need, we will continue our long-standing efforts to reach low-income customers by offering enhanced opportunities to meet their needs. We also plan to roll out/pilot a new Home Energy Report (HER) program that encourage small behavioral changes to save energy and increase awareness of available conservation programs.
- **Commercial and industrial conservation programs:** We serve a diverse group of over 18,000 businesses. Businesses range from large facilities like industrial plants, health

care campuses, schools, and big-box retail, to small businesses such as restaurants, clothing stores, and nail salons. To meet the needs of businesses, we offer business owners a diverse set of conservation programs, including lighting upgrades, equipment rebates, custom retrofits and a strategic energy management program focused on improving efficiency in facility operations.

- **External programs:** We plan to continue to collaborate with external organizations and alliances like the Northwest Energy Efficiency Alliance to deliver energy efficiency outside our traditional conservation programs. Other organizations implement these “programs,” but we contribute funding or technical expertise and can claim savings they help create.

Specific Action 2: Develop an industrial demand response concept by 2024.

Our 2020 IRP calls for 10 MW of demand response. We plan to work with industrial customers to develop a mutually beneficial demand response rate or contract framework by 2024. The industrial demand response framework will include necessary protocols to verify acquisition/participation and to measure capacity resulting from demand response resources.

Specific Action 3: Complete residential demand response pilot by the end of 2024.

Because we believe that demand response will continue to be a promising resource in the future, we are also conducting a pilot of residential demand response through smart water heater controllers. Water heating is one of the ubiquitous electric loads in our service area, and smart water heater controllers have the potential to provide a variety of energy services, including load shed, load shaping, and frequency response. The pilot is in its early stages and will help us build our capabilities to launch and manage demand response programs, understand smart water heater controllers as a demand response resource, test customer recruitment and maintenance strategies, and understand customer acceptance of demand response programs.

4 Ensuring an equitable transition

In our CEIP, we must identify highly impacted communities and vulnerable populations in our service area and report the forecasted distribution of energy and nonenergy benefits of the specific actions we plan to take across these groups.

4.1 Highly impacted communities and vulnerable populations

As directed by CETA, the Washington State Department of Health (DOH) developed a cumulative impact analysis (CIA) to identify communities that are highly impacted by climate change and fossil fuel pollution. Communities are identified based on census tract. DOH provided utilities with the data that we must use to identify highly impacted communities

(HICs) within our service area. The DOH identifies 56 of the 111 (50%) census tracts in our service area as highly impacted communities.

We use the [City of Tacoma's Equity Index](#) to identify vulnerable populations. The Equity Index is an interactive tool that visually highlights disparities in Tacoma and is one of the primary tools that City staff, partners, and other decision makers use to help ensure they are making data-informed decisions to improve access to opportunity for all community members. It uses 29 data points sorted into five broad categories (Accessibility, Economy, Education, Livability, and Environmental Health) to assess where community members are less able to access services. To create the calculations behind Tacoma Equity Index, the City of Tacoma collaborated with the Kirwan Institute to select an array of community indicators of well-being, each of which has been shown in the social sciences literature to influence one's ability to succeed in life. The data for these indicators were collected at or aggregated to the census block group level, and roll up to the overall Equity Index into a single measure based on several factors that can be compared across the city. Census block groups are then grouped into five categories (Very Low Opportunity, Low Opportunity, Moderate Opportunity, High Opportunity and Very High Opportunity) based on their Equity Index score. The Equity Index originally covered only the City of Tacoma but now covers all of Tacoma Public Utilities, including areas outside of Tacoma's city limits. For the purposes of the CEIP, we plan to identify vulnerable populations as those located in "Very Low" and "Low" opportunity areas within Tacoma Power's service area. This approach identifies 110 of the 326 (34%) Census block groups in our service area as vulnerable populations. A mapping of HICs and vulnerable populations for our service area is [available on our website](#).

4.2 Forecasted distribution of energy and nonenergy costs and benefits

4.2.1 Indicators to track the distribution of costs and benefits

CETA directs us to identify one or more indicators applicable to our service area and associated with energy benefits, nonenergy benefits, reduction of burdens, public health, environment, reduction in cost, energy security, or resiliency developed through a public process. After considering a large list of potential indicators and consulting with external stakeholders in a public workshop, we chose to focus on three key indicators:

- **Energy Benefits:** To track energy benefits, we will measure the share of electrically heated homes built before 1989 that have received a high-touch conservation measure (weatherization or HVAC). To create this indicator, we use a dataset that we update every two years for our CPA. The dataset links customer account data, customer billing data, county assessor data and conservation program records going back to the 1980's.

We filter out homes built after 1988⁵ and homes with energy consumption that appears to indicate non-electric heat. We then use conservation program records to determine whether each eligible home has received any weatherization or HVAC upgrades. We calculate our indicator by dividing the total number of homes that have participated by the total number of eligible homes within a census area⁶. While our primary indicator includes both single family and multifamily homes, we also look at participation among each of these two groups separately.

- **Reduction of burdens:** To track reduction of burdens, we measure the share of households who are energy burdened. CETA defines energy burden as the share of annual household income used to pay annual home energy bills. Homes for which this share exceeds 6% are considered energy burdened. We use the US Department of Energy's [Low-Income Energy Affordability Data \(LEAD\)](#) at the census tract level to determine the number of homes that are energy burdened. Because HICs are defined at the census tract level, we apply tract-level data directly to each HIC. However, our vulnerable populations are defined at the block group level, which is more granular than a census tract. Due to this limitation, we assume that the share of energy burdened homes within a census block group is equal to the share that are energy burdened within the larger census tract.
- **Resiliency:** To track resiliency, we measure the average number of service interruptions and the average number of minutes of service interruption per year per year using feeder-level reliability data from 2014 through 2020. Because our data are by distribution feeder, we have to assign outage information to census areas. To do so, we calculate a weighted average using the number of premises in each feeder and block group area, then apply this population weight to the resiliency metrics and summarize by census tract (for HICs) and census block group (for vulnerable populations). It is important to note that these indicators, while useful, do not necessarily represent the experience of any given customer in an area. Given the data available, we must assume that everyone served by a feeder is affected by an outage in the same way. In reality, however, outages can sometimes affect only a subset of customers on a feeder. As we roll out advance metering infrastructure (AMI), our ability to represent the diversity of customers' reliability experience much more accurately.

Indicator development process

The process we used to develop our final list of indicators was:

⁵ In 1989, Tacoma implemented an energy code requiring insulation in new construction homes. Thus, all homes built before then are potentially uninsulated.

⁶ We calculate participation by census tract and census block group in order to look at participation among HICs and vulnerable populations, respectively.

- 1) **Internal Brainstorm:** We first went through an internal utility process to brainstorm potential indicators that fit within the categories identified by CETA (energy benefits, nonenergy benefits, reduction of burdens, public health, environment, reduction in cost, energy security, or resiliency).
- 2) **Indicator Criteria:** We then developed criteria for appropriate indicators and weeded out indicators on the brainstorm list that did not meet our criteria. The principles we developed were:
 - a. **Measurable & mappable:** The indicator can be measured using regionally accepted numbers, processes and practices. We have the data to measure it and disaggregate it by census block group and/or census tract.
 - b. **Relevant:** The indicator can be directly and substantively impacted by resource acquisition decisions, utility expenditures or other specific actions identified in our CEIP.
 - c. **Timely:** The indicator can be impacted within four years, and updated data are available to measure any change over four years.
 - d. **Meaningful:** The indicator is aligned with Tacoma Power's strategy and values, the Tacoma Public Utility Board's Strategic Directives, and with what is important to the community we serve.
- 3) **Indicator Shortlist:** We worked internally to further narrow down the list of potential indicators that met the above criteria to a shortlist of the eight that we believed to be most relevant and appropriate.
- 4) **Public input:** We held a [public workshop](#) to share our draft shortlist of potential indicators. During the public workshop, we asked participants to (a) identify the top indicator they would like to see added to the list of potential indicators and (b) provide their input on which indicators we should prioritize. Each participant was given 100 points to assign however they chose across the list of potential indicators (the eight identified by prior to the meeting plus the additions they suggested during the meeting). The resulting list of indicators and prioritization scores are in Table 3.⁷
- 5) **Final list of indicators:** Keeping the public input we received in mind, we narrowed down our list of indicators to the three we felt were most appropriate and relevant. The three indicators we chose were among the top four prioritized in our public meeting.

⁷ Note that, in some cases, we combined indicators that were very similar into a single category and added up the score. For example, the indicator "number of customers benefiting from conservation programs" received 9.1 points, and "% of customers benefiting from conservation programs" received 2.7 points. These two choices combined received 11.8 points.

Table 3: Indicator prioritization results

Indicator	Average Prioritization Score
Energy burden or % of households that are energy burdened	14.1
Rate impacts	12.3
Number or % of customers benefiting from conservation programs	11.8
SAIDI/SAIFI	10.9
Conservation \$ spent	9.1
Number of customers impacted by outages	8.2
MWh of energy saved	5.5
Customer disconnects	5.5
Assistance \$ spent	3.6
% of customers benefiting from assistance	3.6
MWs of Demand Response	1.8

4.2.2 Current distribution of indicators

Before describing the expected effects of our specific actions on our indicators, we examine their current distribution.

Energy Benefits: Share of electrically heated homes built before 1989 that have received a high-touch conservation measure

Overall, 39% of all eligible homes have benefitted from one of our high-touch conservation program to date. Table 4 describes the distribution of participation rates across different populations in our service area. The participation rate among single-family units⁸ is 42% versus 27% for multi-family homes and 50% for manufactured homes. While participation rates among single and multi-family homes are similar across vulnerable populations versus other areas⁹, there is more of a discrepancy across HICs and non-HIC. Single-family homes in HICs have participated at a higher rate than in other communities, while multi-family homes in HICs have a lower rate of participation than other communities. Participation rates among manufactured homes are much higher in HICs and vulnerable populations, though it is important to recognize that only about one quarter of the manufactured homes in our service area are located in HICs and vulnerable populations.

⁸ For the purposes of Tacoma Power's conservation programs, single family units are defined as single family homes, duplexes, triplexes and fourplexes.

⁹ The one exception is in very high opportunity areas, where participation is actually slightly lower than in other areas.

Because our lower income customers¹⁰, HICs and vulnerable populations are all more likely to rent their homes, an important distinction for conservation outreach is renter-occupied vs. owner-occupied homes. Rental units, whether multifamily units or single-family renter-occupied units, have long been a difficult population of homes for us to reach through our programs. Property owners do not receive the benefit of lower bills when they improve the efficiency of their rental units, while renters are unlikely to invest in improving the efficiency of buildings they do not own. This challenge bears itself out in our program data. Although around 40% of households in our service area are renting their home, just 15% of recent conservation participants are renters (Table 5).

Table 4: Conservation participation rate across our service area

Area	Participation Rate			
	All Homes	Single Family Homes	Multifamily Homes	Manufactured Homes
Highly Impacted Communities	40%	44%	24%	56%
Other Communities	38%	39%	31%	49%
Vulnerable Populations	40%	44%	27%	67%
Other Areas	38%	41%	27%	46%
Total across service area	39%	42%	27%	50%

Table 5: Distribution of renter vs. owner-occupied homes

	Renters	Owners
Entire Service Area	43%	57%
Recent Conservation Participants (since 2016)	15%	85%
HICs	49%	51%
Other Communities	34%	66%
Vulnerable Populations	51%	49%
Other Areas	36%	64%

¹⁰ Based on data in the LEAD tool, households with incomes at or below 80% of area median income are twice as likely to rent their homes as households with higher incomes within our service area (63% vs. 31%).

Reduction of burdens: Share of households that are energy burdened

Overall, 13% of our customers are energy burdened¹¹. Nearly all of those burdened (98%) are lower income¹². Perhaps unsurprisingly, more households are burdened in HICs and vulnerable populations (Table 6). Because lower income customers are more likely to use electric heat rather than natural gas, we also find that the large majority of customers who are burdened (70%) are electrically heated. It is important to note that this does not mean that electrically heated customers are more likely to be burdened. In fact, lower-income customers who rely on other sources of fuel have similar or higher rates of energy burden as those who rely on electricity for heating. However, it does indicate that Tacoma Power has opportunity to help customers who are burdened by their energy bills.

Table 6: Distribution of share of customers who are energy burdened

	% Burdened
Highly Impacted Communities	16%
Other Communities	10%
Vulnerable Populations	17%
Other Areas	11%
Total across service area	13%

Resiliency: Average number and duration of service interruptions per year

Generally, we find no clear disparity in outages across HICs and vulnerable populations versus other groups (Table 8). While HICs and vulnerable populations have a similar number of outages as other areas on average, the duration of outages actually tends to be lower overall. This pattern is driven primarily by the fact that outlying areas to the South of our service area tend to experience longer-duration outages. These areas are generally not classified as HICs or vulnerable populations and so drive up the non-HIC, non-vulnerable population groups' average outage duration.

¹¹ As described in Section 4.2.1, a household is considered “energy burdened” if their total annual home energy expenditures are more than 6% of their annual household income.

¹² For the purposes of this analysis, we consider a household as “lower income” if their annual household income is 80% or less of area median income.

Table 7: Distribution of reliability indicators

	Average Interruptions per Year	Average Minutes Interrupted per Year
Highly Impacted Communities	10	70
Other Communities	10	108
Vulnerable Populations	10	62
Other Areas	9	96
Total across service area	10	89

4.2.3 Expected effects of specific actions identified in Section 3.2

For each specific action identified in Section 3.2, we must identify: (1) the expected effect on highly impacted communities and vulnerable populations, (2) the general location, (3) the timing, (4) the estimated cost of each specific action and (5) whether any resource will be located in highly impacted communities or will be governed by, serve, or otherwise benefit highly impacted communities or vulnerable populations in part or in whole.

***Specific Action 1:** Acquire 106,228 MWh of energy conservation resources over the next four years through a combination of programs for our residential, commercial and industrial customers, as well as through some external programs.*

- **Expected effect:** We expect to see an increase in the share of eligible single and multi-family homes that have received a high-touch conservation measure. Based on our best available information from our 2022-2041 CPA¹³, we estimate our conservation potential is distributed evenly across HICs and non-HICs and across vulnerable populations and other groups. We expect a similarly even split in the increase in the share of homes receiving a high-touch conservation measure over the next four years.
- **Location:** We plan to acquire conservation throughout our service area, including in HICs and census block groups we consider vulnerable populations.
- **Cost:** Our 2022-2041 CPA estimates the average levelized cost of cost-effective conservation to be approximately \$138/MWh on average, which is approximately 33% higher than in the last CPA. This is largely because many lower-cost conservation opportunities are no longer available thanks to a combination of more rigorous codes

¹³ For the 2022-2024 CPA, we assume that the distribution of potential was equal to the distribution of annual energy consumption across HICs versus non-HICs and across census block groups identified as vulnerable populations versus others. Energy consumption is evenly split across these categories, so we assume that the conservation potential is evenly split and that our energy efficiency acquisition will be as well. We recognize that this may not be the case and plan to conduct a potential assessment specifically for HICs and vulnerable populations in the next CPA as well as continue to evaluate the distribution of our acquisition across HICs and vulnerable populations.

and standards, higher adoption of energy efficient products and past successes in acquiring energy efficiency through our programs. The biggest contributor to that is commercial lighting. We only have about 4 years left of this core lighting measures. It is important to note that the total cost estimated in the CPA does not reflect the expected costs of the conservation programs we develop to actually achieve our conservation targets. Our next two conservation plans, which will not be complete in time to inform this CEIP, will develop the budgets needed to meet our targets over the next four years.

Specific Action 2: Develop an industrial demand response concept by 2024.

- **Expected effect:** Because we aim to acquire this DR in order to maintain resource adequacy and we do not currently plan to use it as a distribution system resource, we expect it to help maintain but not change our current reliability level. As a result, we do not expect to see any change in the distribution of our reliability indicators within HICs or vulnerable populations.
- **Location:** We expect that the industrial DR would be located in the tideflats area of our service area, which is within a census tract identified as a highly impacted community.
- **Cost:** Our 2020 IRP estimates that the incremental cost of adding 10MW of industrial DR to be approximately \$3.6 to \$7.8 million over the 20-year IRP study period (\$300,000 to \$700,000 annually).

Specific Action 3: Complete residential demand response pilot by the end of 2024.

- **Expected effect:** Our residential DR pilot aims to oversample low-income customers in order to understand how a potential DR program might work for them. However, this is a small-scale pilot project with a one-time \$80 incentive for participation. As such, we do not expect it to have a direct impact on reliability or overall energy burden for any of our customers, including HICs and vulnerable populations. However, we believe that demand response presents a promising opportunity for customers in HICs and vulnerable populations to participate in Washington's clean energy transition and to support service reliability within their communities. This pilot will help us build our capabilities to be able to offer them demand response opportunities in the future. Lessons learned from this pilot will also help us offer programs to customers in HICs and vulnerable populations to help them manage their energy use under future time of use rate constructs, potentially saving customers money on their bills.
- **Location:** We plan to conduct this pilot throughout our service area, including in HICs and census block groups we consider vulnerable populations.
- **Cost:** We estimate that this pilot will cost between \$142,000 and \$192,000.

4.2.4 Consistency with utility's long-term strategies

With the exception of our conservation target, our interim and specific targets come directly from our most recent (2020) [Integrated Resource Plan](#). Our conservation target comes from our most recent (2022-2024) CPA.

4.2.5 Reducing risks to HICs and vulnerable populations

We are already well positioned to comply with CETA's standards and do not anticipate the state's transition to cleaner energy to increase risks to highly impacted communities and vulnerable populations in our service area. Because we expect that the risks faced by highly impacted communities and vulnerable populations in our service area will remain largely the same as the state transitions to cleaner energy, we plan to build on our current tools to reduce financial risks for low-income customers. We plan to continue to rely on a combination of bill assistance programs and residential energy conservation programs targeted at low-income and hard-to-reach homes to help mitigate risks to HICs and vulnerable populations and seek new opportunities to help them participate in Washington's energy transition. Certain of our Public Utility Board's Strategic Directives also commit the utility to take action to reduce risks to HICs and vulnerable populations.

Bill assistance

We offer two programs to help our limited-income customers: a Discount Rate Program and a Bill Credit Assistance Plan. Our discount rate program offers a discount on utility services¹⁴ to income-qualified customers who are aged 62 years and older or currently qualify to receive disability income. Our Bill Credit Assistance Plan (BCAP) provides a credit to income participating customers' bills each time their utility bill is paid in full and on time. Eligible households can receive up to \$252 per year for electric bill assistance.

In addition to our standard assistance programs, Tacoma Public Utilities and Environmental Services funded an COVID Emergency Assistance Program in the amount of 2.4 million dollars. Finally, in accordance with state law (RCW 35.21.300), we also offer a winter protection program that avoids disconnects for qualifying customers between November 15 and March 15 and work with customers who get behind on bills to develop a payment arrangement.

Every two years, we take a close look at our assistance programs to determine whether we need to adjust them. Our most recent round of program re-examination took place in 2020 and resulted in us making three important changes to our assistance programs. First, we changed our income eligibility requirement from 150% of the federal poverty line to 45% and 60% of area median income for our rate discount and bill assistance programs, respectively. This change means that approximately 5,000 more households can benefit from our rate discount

¹⁴ This program is a Tacoma Public Utilities-wide program and also offers discounts on drinking water, solid waste, recycling and surface water in addition to discounts on electricity.

program and 15,000 more households can benefit from our bill assistance programs. Second, we increased the credit amount available through our BCAP program from 30% of a customer's bill to 35%. Third, we plan to extend the length of time we allow customers to pay arrears through installment plans from 12 weeks to 24 months. This change will take effect in 2022, when we transition out of our COVID-related moratorium on disconnecting customers. We plan to continue this biannual process of re-examining our assistance programs.

Targeted residential energy conservation

Tacoma Power is proud to be a regional leader in serving limited-income customers. We have a long history of offering one of the most comprehensive and robust limited-income conservation programs in the region. Our current program offering helps our limited-income customers by combining our standard rebate with a zero-interest deferred loan. This combination allows people to reduce bills now and pay for improvements through equity in their home when they either sell, refinance, or when occupancy changes. We plan to continue this program and continue to explore opportunities to help homeowners with limited incomes access efficiency opportunities.

We also plan to continue our work to increase the number of rental units served by our programs. The efficiency industry has struggled since the 1970s to help renters because property owners do not receive the benefit of lower bills when they invest in energy-saving improvements, and renters do not make energy efficiency investments in buildings they do not own. We will continue efforts to explore new ways to solve this "split incentive" problem.

New customer opportunities

We are committed to finding ways to ensure that all of our customers have access to new clean energy opportunities, especially those who are at risk of being excluded from the state's transition due to financial or other barriers. Recently, we have initiated/explored several pilot projects to improve access to electric vehicle charging in our community. We are currently supporting projects for EV charging installations at homes, multifamily properties, and businesses. We are also exploring an opportunity to support development of a car share pilot in a continued effort to make EVs available in limited-income areas.

Public Utility Board Strategic Directives

Several years ago, the Tacoma Public Utility Board launched policy development of Government Process, Board-Director Linkage, and Strategic Directives. The [Strategic Directives](#) capture the performance for which the Board will hold TPU accountable on behalf of its ratepayers. At the completion of this CEIP, there are fourteen Strategic Directives adopted by the Board and one directive related to affordability still in development. While many of them are relevant to ensuring a successful transition to clean energy in the state of Washington, [Strategic Directive 1](#)

(SD1) focuses on equity and inclusion and is particularly relevant to ensuring that the transition is equitable. SD1 formally commits TPU to achieving equity and inclusion in our workforce, service delivery, policy decision making, and community/stakeholder engagement and measure progress in part by tracking the number of projects, actions, and initiatives including an equity lens in our analyses, planning, and implementation. We expect that a forthcoming Strategic Directive related to affordability will also be particularly relevant.

5 Use of alternative compliance options

There is no compliance obligation under CETA until 2030. As a result, while we expect to retire RECs to comply with the Energy Independence Act (EIA), we will not need to use any alternative compliance options to comply with CETA during the 2022-2025 compliance period.

6 Resource adequacy standard

CETA also requires utilities that prepare IRPs to establish a standard for resource adequacy by January 1, 2022 that addresses: (a) measures of adequacy, such as peak load standards and loss of load probability or loss of load expectation, (b) methods of measurement, such as probabilistic assessments of resource adequacy, and (c) measures of resource contribution to resource adequacy, such as effective load carrying capability applicable to all resources available to the utility including, but not limited to, renewable, storage, hybrid, and demand response resources.

6.1 Measure of adequacy

Our 2020 IRP adequacy standard is based on three probabilistic measures of adequacy:

- 1) **Magnitude standard:** Annual expected capacity shortage of no more than 0.001% of load per year (NEUE of 0.001% per year).
- 2) **Duration standard:** No more than 2.4 hour of capacity shortage per year (LOLH of 2.4 hours per year).
- 3) **Frequency standard:** No more than 2 days with a capacity shortage of any magnitude or duration every ten years, or 0.2 events per year (LOLE of 0.2 per year).

If a portfolio meets all three standards, we consider it adequate. If a portfolio fails to meet one of the standards, we consider it inadequate.

6.2 Method of Measurement

Our 2020 IRP uses a probabilistic approach to measure adequacy. We run each portfolio through 58 different historic weather years (which includes both inflow conditions and temperatures seen in a historical calendar year) and four alternative load growth trajectories

through scenario analysis (232 simulations total). We also run the preferred portfolio through 58 simulated water and temperature conditions under climate change (20 years' worth of projections from 3 separate sets of climate change projections).

6.3 Measures of resource contribution

Tacoma Power's system model is not currently capable of calculating Effective Load Carrying Capability (ELCC). We are working to create that functionality and hope to have it in place before the next CEIP is due in 2026. In the meantime, we have developed an interim approach to help us to compare the relative contribution of different resources to adequacy. Our interim approach simply compares shortfall size, duration and frequency of a base portfolio (Tacoma Power generation + BPA Slice/Block) to portfolios that add one other resource (wind, solar and demand response). We then calculate the average percent reduction in shortfall across years and divide by the nameplate capacity of the added resource to calculate a percent shortfall reduction per MW of a given resource. Table 8 presents those results.

Table 8: Measures of resource contribution

Resource	% Reduction in UE per MW	% Reduction in LOLH per MW	% Reduction in LOLE per MW
Wind	-0.5%	-0.5%	-0.4%
Solar	0.0%	0.0%	0.0%
Demand Response	-3.2%	-2.3%	-1.7%

7 Public input process

Our public input process for the CEIP builds upon our existing IRP process and centers on public workshops. Our workshops are open to the public, and anyone is welcome to participate. We advertise the workshops to all of our customers on our website, through social media and via a targeted mailing list. We make a concerted effort to secure participation from individuals representing key interests in the community in order to ensure a diversity of perspectives. Key interests we targeted for participation in our IRP and CEIP workshops are:

Customer Classes	Environment and Sustainability	Economic Justice	Other Expertise
<ul style="list-style-type: none"> •Residential customers •Large industrial customers •Large commercial customers •Small and medium business customers •Joint Base Lewis McChord •Puyallup Tribe of Indians •Port of Tacoma •Franchise Cities •Pierce County •City of Tacoma 	<ul style="list-style-type: none"> •Regional organizations •Local organizations 	<ul style="list-style-type: none"> •Low income advocates/ community service providers 	<ul style="list-style-type: none"> •NW Power and Conservation Council •Academic

We held two public workshops for the CEIP. In the first workshop, we sought input from participants on which indicators we should prioritize to track the distribution of energy and nonenergy benefits in our service area. In the second workshop, we sought feedback on the final list of indicators chosen and on our approach to identifying vulnerable populations. We made all other components of the CEIP available online to the public for questions and comments.

We have also started to test out the use of occasional, one-question surveys via social media, on our website and administered during community presentations outside of our normal workshops to seek input from community members who are not able to participate in workshops. We received a very small number of responses to our first mini-survey focused on customer priorities for CEIP indicators but plan to continue to test out the use of mini-surveys as part of our IRP and CEIP process.

We recognize that we still have more work to do to overcome barriers to participation, and we are committed to continuing to improve our approach.