

Tax Incentives and Strategies for Renewable & Distributed Energy Finance

A Report to the Legislature

December 2017

Washington State Housing Finance Commission



WASHINGTON STATE
HOUSING FINANCE
COMMISSION

Opening doors to a better life



Sustainable
Energy Trust

About the Commission



The Washington State Housing Finance Commission is a publicly accountable, self-supporting team, dedicated to increasing housing access and affordability and to expanding the availability of quality community services for the people of Washington. Established by the state legislature in 1983, the Commission finances home loans for low- to moderate-income families and creates and preserves affordable rental housing through tools such as tax-exempt bonds and the Low-Income Housing Tax Credit. The Commission's scope also includes financing nonprofit facilities, first-time farmers and ranchers, energy projects, and more. The governing members of the Commission are ex-officio by statute or appointed by the Governor.

RCW 43.180.295, the Washington State Legislature directed the Washington State Housing Finance Commission to prepare a report that assesses financing tools or models for the aggregation, by public or private entities, of federal tax incentives and other financial benefits accruing from the installation, ownership, and operation of renewable energy systems and other distributed energy resources. To fulfill the requirements of the legislation Commission staff conducted interviews with energy sector experts in Washington and around the country. This report is submitted in fulfillment of the statute.

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List of Acronyms

CEF - Clean Energy Fund
DE S- Department of Enterprise Services
DHA - Denver Housing Authority
ESCO - Energy Services Company
EV - Electric Vehicle
EVIPP - Electric Vehicle Infrastructure Pilot Program
FHFA - Federal Housing Finance Agency
ITC - Investment Tax Credit
kWh - Kilowatt-hour
kW - Kilowatt
LID - Local Improvement District
LIHTC - Low-Income Housing Tax Credit
LLC - Limited Liability Company
MACRS - Modified Accelerated Cost Recovery System
MASH - Multifamily Affordable Solar Housing
MW - Megawatt
PACE - Property Assessed Clean Energy financing
PNNL - Pacific Northwest National Laboratory
PPA - Power Purchase Agreement
PURPA - Public Utility Regulatory Policies Act
QF - Qualified Facility
RPS - Renewable Portfolio Standard
SASH - Single-family Affordable Solar Homes
UTC - Utilities and Transportation Commission
WSDOT - Washington State Department of Transportation
WSHFC - Washington State Housing Finance Commission

Executive Summary

Distributed energy assets, which are resources connected to the electric distribution grid often on the customer side of the meter, have the potential to diversify our energy supply and build wealth and self-sufficiency through local production. Federal and state incentives improve the economic position of distributed energy assets and enable clean energy resources to compete with traditional fossil-fueled or grid-scale energy assets. However, many publicly-oriented projects which serve government entities, nonprofits or low-to-moderate income households are unable to take advantage of these incentives due to the sponsor's non-tax status. Improving the ability of publicly-oriented projects to access tax incentives represents an opportunity for the state to expand the distribution of renewable energy benefits across the state. Many incentives have recently expired or are scheduled to phase out over the next two to three years, so policymakers have a limited timeframe in which to act to improve access to incentives.

In light of federal tax reform, this report considers additional actions on the state level that improve the economics for distributed energy assets and reduce reliance on federal tax benefits. This report focuses on solar, energy storage, and electric vehicles and charging infrastructure, which are experiencing growing customer adoption and have significant potential impact on our energy system in the next few years.

Section 2 summarizes the various existing federal and state level incentives available for solar, energy storage, and electric vehicles and charging infrastructure. Discussion of changes to existing policies occurs in Sections 3 through 5.

Section 3 explores financing models used around the country to finance solar projects and provides possible policy actions that could improve the access of publicly-oriented projects to federal and state tax benefits, as well as state actions to promote solar projects without federal tax incentives.

Section 4 provides a summary of the market for energy storage projects and the need for additional market development and state support.

Section 5 discusses the market for electric vehicles and charging infrastructure, as well as existing state efforts to expand electric vehicle charging infrastructure. This section also provides policy options that build on these efforts to promote public and private charging infrastructure.

Section 6 prioritizes the policy recommendations for expanding deployment of clean energy assets in the next two or three years. The highest priority actions are:

Solar

- **Allow customers purchasing renewable energy through a Power Purchase Agreement (PPA) to be eligible for the Renewable Energy Cost Recovery Incentive.**
- **Provide clarity regarding the Utility and Transportation Commission's jurisdiction to regulate third party owners of renewable energy systems.**
- **Allow customers leasing renewable energy equipment from a third-party owner to be eligible for the Renewable Energy Cost Recovery Incentive.**
- **The Department of Enterprise Services has the authority to develop standard contracts for or permit project-specific PPAs between Energy Services Companies (ESCOs) and Energy Performance Contracting participants that accommodate ESCO ownership of solar equipment.**
- **The Washington State Housing Finance Commission (WSHFC) could serve as a facilitator for housing authorities to administer community solar.**

- **Increase the net metering project size limit from 100 kilowatts (kW) to 500 kW.**
- **Increase the net metering threshold from 0.5 percent of utilities' 1996 load.**

Electric Vehicles and Charging Infrastructure

- **Allow consumer-owned utilities to recover costs of electric vehicle charging infrastructure through rates.**
- **Expand WSHFC authority to issue infrastructure bonds, including for EV charging infrastructure.**

As the Legislature considers actions to expand the clean energy industry in our state, it is important to consider actions that support projects that provide substantial public benefit. The recommended actions listed above provide a clear pathway forward to expand access to existing financial benefits and improve the policy mechanisms already in place to support energy investment.

1. Introduction

Distributed energy assets, which are resources connected to the electric distribution grid often on the customer side of the meter, have the potential to diversify our energy supply and build wealth and self-sufficiency through local. Federal and state incentives to improve the economic position of distributed energy assets enable cleaner energy resources to compete with traditional fossil-fueled energy assets. Most incentives have legislated ending dates, which are not necessarily aligned with any decline in the costs of distributed energy resources. The phase out of many incentives will occur regardless of whether these resources have reached market competitiveness. It is unclear if the phase out of incentives will be balanced out by the increase in competitiveness or will inhibit continued development of distributed energy. The next two to three years represent a critical window for deployment of distributed energy assets while federal and state tax incentives levels are still meaningful.

Certain sectors of the economy have struggled to access the economic benefits of these incentives, resulting in higher costs to acquire distributed energy compared to other sectors. This report explores the financing models, partnerships and policies that can improve the access to the tax and other financial benefits associated with solar photovoltaics, storage and electric vehicles by public and nonprofit entities as well as low to moderate income households. Addressing the economics of these publicly-oriented projects represents an opportunity for the state to improve the distribution of renewable energy benefits across the state.

Unfortunately, federal tax reform may considerably impact the value or existence of tax benefits for distributed energy assets. Significant change to the corporate tax rate or specific federal tax incentives could negatively affect the current market dynamics for distributed energy assets. Consequently, this report includes actions on the state level that would improve the economics for distributed energy assets and reduce reliance on federal tax benefits.

2. Existing Federal and State Tax Incentives and Policies

This section provides an overview of existing federal and state tax incentives available to solar equipment, energy storage equipment, and electric vehicles (EVs) and associated charging infrastructure. Discussion of the merits of the incentives and potential policy changes occurs in Sections 3 through 5.

2.1 Solar

2.1.1 Investment Tax Credit and Modified Accelerated Cost Recovery System

The federal Investment Tax Credit (ITC) is a tax credit that can be claimed by commercial and residential entities, equal to 30 percent of the cost basis of eligible solar electric and thermal equipment. Construction and original use of the equipment must be by the taxpayer, and the equipment must be operational in the year the credit is first taken.¹ Equipment financed in whole or in part by subsidized energy financing or private activity bonds must reduce the amount of basis claimed for the credit.² Beginning in tax year 2019, the values of both the commercial and residential ITC are scheduled to gradually decrease. For corporate entities, the ITC will decrease to 10 percent by 2022, and completely expire for residential entities in 2021.

¹ 26 U.S.C. §48(3)(B).

² 26 U.S.C. §48(a)(4)(A).

The Modified Accelerated Cost Recovery System (MACRS) allows corporate entities to reduce tax liability through annual depreciation deductions over a specified property life. Solar electric and thermal equipment is eligible for a cost recovery period of five years. For taxpayers claiming the ITC on eligible solar equipment, the depreciable basis for MACRS must be reduced by 50 percent of the value of the 30 percent ITC.³ Additionally, MACRS includes bonus depreciation for the first-year placed in service. Bonus depreciation gradually declines from 40 percent for projects placed in service during 2018, to 30 percent for projects placed in service during 2019, before completely expiring in 2020.⁴

2.1.2 Net Metering

All Washington utilities are required to credit customer bills when an eligible customer-owned renewable energy system produces more electricity than is consumed in a billing period.⁵ Credit is applied at the retail rate of electricity, and unused credit is carried over from month to month. Any unused credits accrued by April 30 of each calendar year are granted to the utility. Net metering is available on a first-come, first-served basis to qualified systems up to 100 kilowatts (kW) of capacity though larger systems may interconnect at the utility's discretion,⁶ until the cumulative generating capacity of net metered systems equals 0.5 percent of the utility's 1996 peak demand.

2.1.3 Energy Independence Act

The Energy Independence Act establishes a renewable portfolio standard (RPS) for Washington State utilities that serve more than 25,000 customers. The 18 utilities subject to the RPS, must obtain 15 percent of their electricity from new renewable resources or acquire equivalent renewable energy credits by January 1, 2020.⁷ Utilities may count distributed generation with a capacity of 5 MW or less as double the facility's output if the utility owns or has contracted for the generation and the associated renewable energy credits, or has contracted to purchase the associated renewable energy credits.⁸ Compliance of the investor-owned utilities is overseen by the Washington UTC, and by the governing boards of public utility districts and municipal utilities. All utilities must file an annual report with the Washington State Department of Commerce.

Currently, 29 states, the District of Columbia, and 3 U.S. territories have mandatory RPS policies, and an additional 8 states and 1 territory have renewable portfolio goals. Among Western states with similar RPS timeframes, Washington has one of the lowest renewable resource targets. Twenty-two states and DC have carveouts for specific types of renewable energy within the RPS or multipliers that create additional credit for specific types of renewables.⁹ Washington does not have any carveouts, but does include multipliers for distributed generation and apprenticeship programs.

2.1.4 Public Utilities Regulatory Policies Act (PURPA)

The Public Utilities Regulatory Policies Act (PURPA) of 1978, is a federal statute that supports energy conservation and the development of renewable energy resources. A provision of the law encourages the

³ 26 U.S.C. §50(c)(3).

⁴ Please note that this reflects the federal tax code as of December 2017. The Tax Cuts and Jobs Act of 2017 modifies this to allow full expensing of eligible costs for the next five years.

⁵ [RCW 80.60.020\(1\)\(a\)](#).

⁶ [RCW 80.60.010\(10\)\(a\)](#).

⁷ [RCW 19.285.040\(2\)\(a\)\(iii\)](#).

⁸ [RCW 19.285.040\(2\)\(b\)\(i\)](#); [RCW 19.285.040\(2\)\(b\)\(ii\)](#).

⁹ For a comparison of state RPS goals see: <https://emp.lbl.gov/sites/default/files/2017-annual-rps-summary-report.pdf>.

development of renewable energy through the establishment of qualifying facilities (QFs), which are power production facilities that use renewable resources as a primary energy source and have a generating capacity of no more than 80 megawatts (MW).¹⁰ Under PURPA, utilities are obligated to purchase electricity produced by QFs at utilities' avoided cost rate. The Washington Utilities and Transportation Commission (UTC) oversees investor-owned utility avoided cost methods and terms of standard contracts for small projects. The UTC is currently engaged in a rulemaking regarding avoided cost rates and PURPA contracts.¹¹

2.1.5 Renewable Energy Cost Recovery Incentive

The Washington Renewable Energy Cost Recovery Incentive program pays owners of solar electric systems for every kilowatt-hour (kWh) of electricity produced. Beginning in 2018, the incentive base rate for residential-scale and community solar is \$0.16 per kWh produced, and \$0.06 per kWh for commercial-scale and shared commercial solar. Additionally, systems with components made in Washington receive a bonus rate of \$0.05 per kWh produced. The above incentive and bonus rates gradually decline to \$0.10, \$0.02, and \$0.02 per kWh respectively in 2021. Annual incentive payments are limited to \$5,000 per residential or community solar participant, \$25,000 per commercial entity, and \$35,000 per shared commercial participant.¹²

2.1.6 Sales Tax Exemption

Washington previously provided a 100 percent sales tax exemption for solar systems capable of producing up to 10 kilowatts (kW) of electricity, and 75 percent sales tax exemption for solar systems with capacity from 10 up to 500 kW. These sales tax exemptions expired as of September 30, 2017. Between 2010 and the third quarter of 2017, the value of sales tax exempted for equipment up to 10 kW was approximately \$71.5 million. Buyers of solar electric equipment that is capable of producing more than 500 kW of electricity, are still eligible for a 75 percent refund of the sales tax paid.¹³ The buyer pays sales tax at the point of sale, then applies to the Department of Revenue for a refund. This incentive is scheduled to expire January 1, 2020. Solar thermal equipment capable of producing no more than 3 million British thermal units per day is eligible for a 100 percent sales and use tax exemption until June 30, 2018.

2.2 Energy Storage

2.2.1 Investment Tax Credit and Modified Accelerated Cost Recovery System

Energy storage systems owned by private entities are eligible for the federal ITC if they are charged by a renewable energy system more than 75 percent of the time in an annual measuring period.¹⁴ Storage systems charged between 75 and 99 percent of the time by a renewable energy system qualify for a portion of the ITC equal to the amount of time it is charged attributed to the renewable energy system.¹⁵ Only storage systems that are charged by a renewable energy system 100 percent of the time during an annual measuring period are eligible for the full 30 percent ITC. Furthermore, the ITC can be claimed for

¹⁰ 18 C.F.R. §292.204(b)(1)(i); 18 C.F.R. §292.204(a)(1)

¹¹ Docket U-161024.

¹² [RCW 82.16.165\(a\)](#).

¹³ [RCW 82.08.962\(5\)\(a\)](#).

¹⁴ 26 C.F.R. §1.48-9(d)(6)(i); 26 C.F.R. §1.48-9(e)(1).

¹⁵ 26 C.F.R. §1.48-9(d)(8)(h)(i).

storage equipment added to existing qualified renewable energy systems.¹⁶ In October 2015, the IRS issued a request for comment on whether storage devices may be considered energy property for purposes of qualifying for the ITC and whether “dual-use” storage property charged by both renewable and conventional energy should qualify for the credit.¹⁷ To date, the IRS has not issued guidance on the subject.

Corporate entities are eligible to accelerate the depreciation of energy storage equipment utilizing MACRS. Stand-alone storage systems, or storage systems charged less than 50 percent of the time by a qualified renewable energy system, are eligible for the 7-year MACRS depreciation schedule. Storage systems charged 50 to 100 percent of the time by a renewable energy system are eligible for the 5-year MACRS depreciation schedule (See Table 1).¹⁸

*Table 1.
Federal Tax Benefits for Energy Storage*

	Storage System Type	Stand-alone	Charged by eligible renewable energy system			
			<50%	50-75%	75-99%	100%
Incentive	ITC	Not Eligible	Not Eligible	Not Eligible	Portion of ITC	30% ITC
	MACRS	7-year	7-year	5-year	5-year	5-year

2.2.2 Sales Tax Exemption

Storage equipment used directly with renewable energy systems is eligible for a 75 percent sales tax exemption. The equipment must be part of the renewable energy system, or replacement equipment that increases the productivity, improves efficiency, or extends the life of the renewable energy system.¹⁹ Storage equipment paired with a solar system is only eligible for the 75 percent sales tax exemption if the solar system is capable of producing 500 kW or more of electricity. The buyer pays sales taxes at the point of sale, then applies to the Department of Revenue for a refund. This incentive is scheduled to expire January 1, 2020.

2.3 Electric Vehicles and Charging Infrastructure

2.3.1 Qualified Plug-in Electric Drive Vehicle Credit

The federal plug-in electric drive vehicle credit is a tax credit against a commercial or individual entity’s tax liability for the purchase or lease of a new electric vehicle (EV). The base amount of the credit is \$2,500 for EVs with a battery capacity of at least 5 kWh. The amount of the credit increases by \$417 for each additional kWh of battery capacity over the 5-kWh minimum, to a maximum credit value of \$7,500.²⁰ The credit is only available for the tax year the car is purchased, leftover credit cannot be

¹⁶ IRS P.L.R. 2012-08-035 (Feb. 24, 2012).

¹⁷ For more information see: https://www.irs.gov/irb/2015-43_IRB#NOT-2015-70.

¹⁸ Please note that this reflects the federal tax code as of December 2017. The Tax Cuts and Jobs Act of 2017 modifies this to allow full expensing of eligible costs for the next five years.

¹⁹ [RCW 82.08.962\(2\)\(d\)\(i\)](#); [RCW 82.08.962\(2\)\(d\)\(ii\)\(D\)](#).

²⁰ 26 U.S.C. §30D(b)(3).

carried to future tax years. Phase out of the credit begins when 200,000 qualified EVs have been sold by each manufacturer, after which the value of the credit declines over four calendar quarters to zero. To date no manufacturer has reached the 200,000 EV threshold, though some expect to reach the threshold soon.

2.3.2 Sales Tax Exemption

Sales and leases of new light- and medium-duty plug-in electric passenger vehicles and light-duty trucks are exempt from state sales tax. The exemption is applicable up to the first \$32,000 of a vehicle's selling price or total lease payments.²¹ For the period from July 2015 to July 2017, the Department of Revenue calculated approximately \$6,781,904 in state sales taxes have been exempted through this program. The exemption is scheduled to expire July 1, 2019, or once the total number of qualifying vehicles sold reaches 7,500, back dated to July 15, 2015.

The sales of or charges made for installing, constructing, or improving electric vehicle infrastructure are exempt from state sales and use taxes.²² Additionally, tenants of public lands used for installing and operating electric vehicle infrastructure are exempt from state leasehold excise taxes.²³ Both exemptions expire January 1, 2020.

2.3.3 Clean Alternative Fuel Commercial Vehicles Tax Credit

The Clean Alternative Fuel Commercial vehicle tax credit is a state tax credit against a commercial entity's business and occupation or public utility tax liability for the purchase, conversion or lease of clean alternative fuel commercial vehicles. Clean alternative fuels include electricity, dimethyl ether, hydrogen, methane, natural gas, liquefied natural gas, compressed natural gas, or propane.²⁴ The value of the credit is determined according to the gross vehicle weight and the incremental cost of the vehicle compared to a conventionally fueled vehicle.²⁵ A business or utility is limited to the lesser of the incremental cost amount or the maximum credit amount per vehicle, and may claim no more than \$250,000 or the amount of credit associated with 25 vehicles per calendar year.²⁶ Credit earned may be carried over to the subsequent calendar year. To claim the credit, eligible entities must apply to the Department of Revenue within one year of delivery of the alternative fuel vehicle. Credits are available on a first come, first served basis, and the total amount of credits during a calendar year must not exceed \$6 million.²⁷ This tax credit is scheduled to expire January 1, 2022.

3. Solar Financing

A variety of financing models are used around the country to leverage tax benefits for publicly-oriented solar projects. This section summarizes the models, barriers and actions needed to implement those models in Washington State.

²¹ [RCW 82.08.809\(1\)\(b\)](#).

²² [RCW 82.08.816](#); [RCW 82.12.816](#).

²³ [RCW 82.29A.125](#).

²⁴ [RCW 82.04.4496\(15\)\(b\)](#).

²⁵ [RCW 82.16.0496\(1\)\(a\)](#).

²⁶ [RCW 82.16.0496\(3\)](#).

²⁷ [RCW 82.16.0496\(5\)](#).

3.1 Tax Equity Partnership

How it works: Tax equity partnerships are commonly formed between a project sponsor and a private investor through the creation of a special purpose entity, often a limited liability company (LLC). The private investor, also referred to as the tax credit investor, typically has 99 percent ownership in the LLC and the project sponsor has one percent ownership. The project sponsor remains the controlling or “general” partner. The tax credit investor’s sole purpose is to invest funds in exchange for tax credits against federal income taxes as well as tax deductions derived from depreciation. The project sponsor, which can include nonprofits, solar developers and utilities, receives the benefits of the electricity generation, net metering credits, and any applicable state or local incentives. Once the value of the tax credit and accelerated depreciation have been fully captured by the tax credit investor, the ownership of the project is typically transferred to the project sponsor through the termination of the LLC and according to a pricing or an exchange mechanism negotiated at the time of the LLC’s creation.

Can it be done in Washington? Yes. The tax equity partnership model is commonly used for Low Income Housing Tax Credits (LIHTC) for affordable housing and New Market Tax Credits for economic development in qualifying areas, and can be applied to the Investment Tax Credit as well. For example, the Investment Tax Credit could be combined with a LIHTC partnership to install renewable energy on new construction or rehabilitation of an affordable housing project. Outside of affordable housing, solar projects must be large enough to attract tax credit investors. Many large commercial banks are only interested in investing in projects or portfolios of projects that are one MW or larger, for the value of the tax credits to outweigh the transaction costs. Smaller, local banks may be interested in investing in projects smaller than one MW, but transaction costs may still be a barrier.

What actions are needed to support this model in Washington? No legislative actions are needed to implement tax equity partnerships in Washington. The authority to establish tax equity partnerships already exists for solar, both integrated in affordable housing projects or as stand-alone projects. As private investors gain experience establishing solar tax equity partnerships, the transaction costs of establishing special purpose entities should decline.

3.2 Power Purchase Agreements

How it works: In a power purchase agreement (PPA), a private solar developer builds and owns the solar project and enters into a contract with the customer for the energy produced by the project. The customer may be a utility or other property owner. Similar to a tax equity partnership, the private developer claims the value of the Investment Tax Credit and the accelerated depreciation. The customer pays for the electricity generated by the project developer at a negotiated rate, which allows the developer to recover its capital investment and maintenance expenses over the term of the contract. Depending on the state and the contract, the customer may also receive production incentives, carbon credits or renewable energy credits associated with the generation. Over the typical 15- to 20-year term of a contract for a non-utility customer, the customer typically pays less for the solar generation than purchasing an equivalent amount of power from their utility while reducing exposure to utility rate volatility. The developer retains ownership of the solar equipment during the contract term, though PPAs can be structured to include an ownership transfer or purchase at the end of the contract.

PPAs can be pre-paid, where the cost of the PPA is paid in full at the beginning of the contract, and then the customer receives the benefits of the electricity generation over the term of the contract. Pre-paid

PPAs can be attractive to non-utility customers who lack the upfront capital and receive loan or bond financing to pay for the PPA and then repay the loan or bond from the value of the energy production.²⁸

Can it be done in Washington? Yes. PPAs are a common structure between private developers and utilities and government, nonprofit and commercial entities. For contracts with non-utility partners, the private developer is not subject to regulation as a utility by the UTC because the contract is directly between the developer and the customer, and no sales occur to other customers.²⁹ Contracts between developers and utilities are subject to UTC regulation. PPAs can be an attractive arrangement between utilities and developers, because utilities may not have sufficient tax burden to take full advantage of the Investment Tax Credit as a result of claiming accelerated depreciation on other utility assets.

What actions are needed to support this model in Washington? Washington's regulatory framework allows developers and customers to enter into PPAs, but the state Renewable Energy Cost Recovery Incentive is only available to utility customer-owners of renewable energy systems. Under a PPA contract, ownership of the solar system stays with the private developer, and therefore PPA projects are ineligible for the Renewable Energy Cost Recovery Incentive. As a result, publicly-oriented projects that could take advantage of the investment tax credit through a PPA are at an economic disadvantage.

Policy Action: Allow customers purchasing renewable energy through a PPA to be eligible for the Renewable Energy Cost Recovery Incentive.

3.3 Leasing

How it works: A private entity pays the upfront capital to install a solar system on a customer's property and then enters into a leasing agreement with the customer for the equipment. Unlike a PPA, where the customer pays for the solar generation, under a leasing agreement the customer leases the equipment itself and receives all the associated benefits of the energy production. The private entity captures the Investment Tax Credit and accelerated depreciation, which is reflected in the cost of leasing for the customer. The lease may include ownership transfer or purchase options at the end of the lease term. Solar systems can be leased to customers by their utility or by a third party private developer.

Can it be done in Washington? Investor-owned utilities have the authority to offer leasing programs, as affirmed by UTC Order 06 in Docket UE-151871, and any such leasing programs must be approved by the UTC prior to implementation. Multiple consumer-owned utilities have offered leasing programs to their customers in the past for equipment such as street lighting and water heaters, so it is likely that that authority could be applied to solar leasing.

Third party leasing is not prohibited in Washington, but there are two key barriers to implementation. First, there is a lack of clarity around the degree of regulation the UTC would have over third-party owners. The UTC stated its preference to regulate third party owners of net metered systems for consumer protection, but not for rate-setting purposes.³⁰ The UTC further requested that the Legislature clarify the UTC's jurisdiction to regulate third-party owners. Without that clarity, third party leasing companies are reluctant to enter the Washington market. The second barrier is that customers who do not own renewable energy systems are not eligible for the Renewable Energy Cost Recovery Incentive, as discussed in

²⁸ For more information about the White Creek 205 MW wind pre-paid PPA in Klickitat County, see:

<https://financere.nrel.gov/finance/content/floating-bonds-blowing-wind>

²⁹ [RCW 80.04.010\(12\)](#).

³⁰ Docket UE-112133, Interpretive Statement.

Section 3.2 Power Purchase Agreements. The ability to take advantage of the Investment Tax Credit is countered by the lack of access to the production incentive and inhibits the economic viability of publicly-oriented leased solar projects. Even if third party owners of solar systems could receive the production incentive, the limit on annual incentive payments per entity would still inhibit third party ownership of multiple systems. Allowing customers of leased solar systems to access the incentive would provide access to the production incentive, although they would still face the annual incentive payment cap.

What actions are needed to support this model in Washington? Solar leasing is a tool used in many other states around the country to enable nonprofit, government and low- to moderate-income households to access the benefits of solar without needing an upfront capital investment.

Policy Action: Provide clarity regarding the UTC’s jurisdiction to regulate third party owners of renewable energy systems.

Policy Action: Allow customers leasing renewable energy equipment from a third-party owner to be eligible for the Renewable Energy Cost Recovery Incentive.

3.4 Energy Savings Performance Contracting

How it works: A property owner enters into a contract with an Energy Services Company (ESCO), which provides energy services including energy-related capital needs assessments, replacement of equipment, and operation and maintenance. Energy Savings Performance Contracting typically uses one of two approaches to finance the projects. In the first approach, the property owner pays the ESCO at the rate they would otherwise pay the electric utility for energy savings compared to baseline energy use before the project is implemented. In turn, the ESCO provides equipment and services that save energy and money. The capital cost of projects may be paid by the financial savings of the project or based on a guaranteed maximum project cost. In the second approach, the property owner secures financing from a lender to pay the ESCO upon completion of the project, and then uses the financial savings to repay the loan. In either approach, the customer retains ownership of the equipment, and the ESCO provides project development, management and implementation support. Because the customer owns the equipment, the ESCO is unable to capture the value of the tax credit on the property owner’s behalf, unless the parties enter a PPA that specifies that the ESCO owns the equipment.

Can it be done in Washington? Energy Savings Performance Contracting is widely used across Washington, especially in the public sector, though it may also occur between an ESCO and a private entity. The Department of Enterprise Services (DES) has the authority to assist state agencies and school districts to implement cost-effective conservation improvements at their facilities. Energy Savings Performance Contracts can include energy efficiency, solar, storage and electric vehicle charging infrastructure. However, DES has interpreted “facilities” to mean existing facilities, which excludes solar installations as standalone projects or as part of new construction projects (where a facility doesn’t exist yet). DES prequalifies ESCOs and provides project development support, standard contracts and quality assurance.³¹

What actions are needed to support this model in Washington? Energy Savings Performance Contracting is relatively mature in Washington, but equipment ownership can be a barrier to taking

³¹ [RCW 39.35C.020](#).

advantage of the Investment Tax Credit and accelerated depreciation. Capturing the value of the tax credits would make solar much more economically viable for the public sector.

Clarification or explicit authorization from the Legislature for DES to support solar installations as standalone projects or as part of new construction would better leverage the existing Energy Savings Performance Contracting program for solar in the public sector.

Policy Action: The Department of Enterprise Services has the authority to develop standard contracts for or permit project-specific PPAs between ESCOs and Energy Savings Performance Contracting participants that accommodate ESCO ownership of solar equipment to pass through the value of tax benefits to participants.

Policy Action: Allow the Department of Enterprise Services to include solar as part of new construction or as standalone projects in Energy Savings Performance Contracting.

3.5 Community and Shared Solar

How it works: Community and shared solar programs allow groups of organizations or individual utility customers to share the benefits of one solar electric array. Participants in a community or shared solar program purchase kW shares of a project, which entitles them a portion of the power generation and financial benefits. As defined by the Renewable Energy Cost Recovery Incentive, community solar projects can have a nameplate capacity up to one MW, and must have either at least 10 participants or one participant for every 10 kW.³² Shared commercial projects must be organized and administered by a utility, with a nameplate capacity between one and five MW, and have at least five participants.³³ Incentive payments are limited to \$5,000 per year for community solar and \$35,000 for shared solar, and participants must be customers of the utility providing service to the array.³⁴ The UTC is currently engaged in rulemaking to define a “community solar company” and address issues such as consumer protection, annual reporting requirements, and other business practices associated with community solar.

Can it be done in Washington? Yes. Utilities have the authority to administer community and shared solar programs on behalf of their customers. For example, Avista administers the largest community solar project in Washington, and Seattle City Light has built four community solar projects. Customers purchase shares of the total output of the community solar projects, for which they receive on-bill credit for their portion of the power produced by the array. Both programs are scheduled to last through 2020, when the original state production incentive was scheduled to expire. Under the current incentive program, housing authorities have been given the authority to organize and administer community solar projects. Housing authorities could adopt the model used by the Denver Housing Authority (DHA), where participants in the community solar program are individual affordable housing properties and other housing providers and DHA is the administrator. DHA financed the project with a tax equity partnership to monetize tax credits and accelerated depreciation to finance the project. Each affordable housing property then entered a 5-year PPA with DHA for the power generation. The current incentive program also allows nonprofits to administer community solar projects, but as of yet, we are unaware of any nonprofits planning to do so.

³² [RCW 82.16.170\(2\)](#).

³³ [RCW 82.16.175\(3\)](#).

³⁴ [RCW 82.16.170\(2\)](#); [RCW 82.16.175\(3\)](#).

What actions are needed to support this model in Washington? Most utilities in Washington do not need new solar generation to meet their resource needs, so community solar or shared solar activity is largely driven by customer demand. The application of credit to customer bills can be administratively burdensome or expensive to integrate with a utility billing system.

Policy Action: Require utilities to provide monthly bill-crediting for community and shared solar projects, and provide incentives to help utilities configure their billing systems for bill-crediting.

Policy Action: The Washington State Housing Finance Commission could serve as a facilitator for housing authorities to administer community solar.

3.6 Property Assessed Clean Energy

How it works: Property Assessed Clean Energy (PACE) is a financing mechanism that enables a government entity to obtain low-cost financing and pass along the low cost of borrowing to a property owner for a range of energy efficiency, renewable energy or other infrastructure improvements. The financing is typically repaid in installments collected as a special tax or assessment by the applicable county via the property owner's property tax bill. The assessment amount covers the cost of the improvements and applicable financing and administrative costs of the PACE program.

Opposition to residential PACE programs emerged during the housing crisis, because PACE assessments create liens that have priority over home mortgages. The Federal Housing Finance Agency (FHFA) issued a determination in 2008 that residential PACE programs presented significant safety and soundness concerns to existing mortgages and the entities that underwrite or insure those mortgages. In 2010, FHFA ordered Fannie Mae and Freddie Mac to (i) adjust loan-to-value ratios to reflect the maximum permissible PACE loan amount available to borrowers; (ii) ensure that PACE loan covenants require approval/consent from a bank or mortgage holder on the property; (iii) tighten borrower debt-to-income ratios to account for additional obligations associated with future PACE loans. These actions considerably dampened residential PACE activity around the country. Despite indication from the Federal Housing Administration (FHA) in 2016 that it would begin insuring mortgages on properties with PACE liens, FHA reversed course in December 2017 and announced it would no longer insure such properties.

For commercial PACE programs, the Office of the Comptroller of the Currency issued Supervisory Guidance in 2006 calling for national banks to mitigate exposure and protect collateral positions. Commercial PACE programs that require affirmative acknowledgment or consent of the mortgage holder are considered to adequately mitigate risks to lenders. As a result, most current PACE activity around the country is in the commercial sector.

Can it be done in Washington? Washington currently lacks specific constitutional and statutory authority to create PACE districts. Washington has the legal framework for creating Local Improvement Districts (LIDs), which can exercise governmental authority to levy and collect special assessments, but this authority is limited. Article VII, §9 of the Washington State Constitution provides that "The legislature may vest the corporate authorities of cities, towns and villages with power to make local improvements by special assessment, or by special taxation of property benefited...." State courts have repeatedly interpreted this as authorizing a mechanism for financing "local improvements" that are primarily public in nature. The constitutional authority precludes the use of special assessment financing for improvements that are privately owned or primarily for the benefit of a private property owner. PACE

financing of solar or other clean energy equipment through the collection of special assessments within a LID would be permitted only if the improvements were “local improvements” owned by the public sector and primarily benefiting the public or a public utility, in addition to providing a private benefit sufficient to support the assessments.

The use of a LID structure to provide low-cost loans to private persons for primarily private improvements would also raise concerns under Article VIII, §§5 and 7, which prohibit the lending of credit. In the utility efficiency context, this was remedied by the passage and approval of several constitutional amendments that appear in Article VIII, §10, which specifically authorizes the making of loans by municipal utilities to improve efficiency in the use by utility customers of energy, water, sewer and storm water services. This provision is successfully utilized by many municipal utilities to provide relatively low-cost financing for various efficiency improvements to private properties.

In addition to the constitutional challenges described above, Washington’s LID statutes³⁵ are very specific about the types of improvements that may be financed through the creation of a local improvement district. RCW 35.43.040 provides a long list of permissible “local improvements.” Despite language that the list is non-exclusive, it is extremely rare that a local government would attempt to create a LID to finance anything that is not at least related to something that appears on that list.

What actions are needed to support this model in Washington? Constitutional amendments and statutory changes would be necessary to authorize PACE financing through LIDs. Although PACE financing could unlock widespread investment in clean energy project, this model may take considerable effort to implement due to the degree of constitutional and statutory change necessary.

3.7 YieldCo

How it works: A yieldco is a publicly traded company created by a sponsor company, such as an independent power producer, to own a portfolio of their operating energy assets and distribute cash flows produced by those assets. By separating the sponsor company’s cash-generating projects from those under development, yieldcos mitigate the risk associated with developing new projects and create more predictable returns on investments in renewable energy. The sponsor company maintains a majority ownership interest in the yieldco, while a minority interest is held by public shareholders. Through sales of stock in the yieldco, the sponsor company raises capital for new projects more affordably from a broader pool of investors and in turn provides a pipeline of projects for the continued growth of the yieldco.³⁶ To maintain future growth, it is common for the yieldco and its sponsor company to maintain a right of first offer agreement, ensuring the yieldco has a pipeline of projects and cash flows.³⁷

Can it be done in Washington? Yieldcos could be used in Washington, however, the growth focus of the model creates substantial risks. Yieldcos must continue to add new projects to their portfolios to continue increasing cash flows and minimizing taxable income. Yieldcos distribute the majority of their cash to shareholders, so developing new projects to meet growth requirements requires taking on additional debt. Turning to capital markets exposes yieldcos to market conditions which could raise the

³⁵ Cities are authorized to create local improvement districts under chapters 35.43 through 35.56 RCW, and most other statutes authorizing local government entities to create local improvement districts cross-reference the city statutes.

³⁶ National Institute of Building Sciences. (2016). *Financing energy-efficiency and renewable-energy projects: Public equity instruments: An analysis of REITs, MLPS and Yieldcos.*

³⁷ Urdanick, M. (2014, September 3). *A deeper look into Yieldco structuring.*

cost of or limit access to capital. Though yieldcos have been used successfully for renewable energy investment, the long-term risks and uncertainties created by continuously growing cash flows reduce the reliability of yieldcos as an effective financial tool.

What actions are needed to support this model in Washington? No action is necessary to support the use of yieldcos for solar investment in Washington.

3.8 Low-Income Solar

Low- to moderate income individuals face additional barriers to installing or using solar energy, in part due to high upfront costs of installation and the current price premium of solar above utility rates. As a result, much of the residential solar installed in Washington and the associated production incentive and tax credits benefits residents with higher income levels. Addressing this “green divide” is critical to ensuring fair access to the growing clean energy economy.

Of the financing models discussed above, leasing and community solar have the greatest potential to directly benefit low-income individuals. Programs such as DHA’s community solar program for affordable housing could provide direct and indirect benefit for low-income individuals. Other policy actions that improve the underlying economics of solar projects would benefit all customers, including low-income individuals. As discussed in Section 3.9.3 below, carve-outs or multipliers for either low-income solar or community solar in state RPS targets can be effective in creating access to the benefits of solar for low-income individuals.

Other enabling policies to improve access to solar for low-income individuals include targeted use of public dollars (such as California’s capacity incentive programs, discussed in Section 3.9.4), utility on-bill repayment of low-interest loans, and combining solar investments with energy efficiency projects.³⁸ Posigen, a solar company that specializes in serving low-income communities, leases solar equipment to low-income households in combination with energy efficiency upgrades. Posigen’s model works best where monthly energy bills are over \$120, where state and local incentives bring down the cost of installation and, in Connecticut, a loan-loss reserve fund from the Connecticut Green Bank lowers the cost of capital. Improving access to the Renewable Energy Cost Recovery Incentive, sales tax exemptions, or other financial benefits could improve the ability of solar companies to serve low-income communities.

3.9 Other Supportive Actions

The financing methods discussed above allow publicly-oriented projects to access tax benefits to improve the underlying economics. However, with the decline in federal tax benefits, range of utility rates and variability of solar resource across the state, projects may still need additional benefit streams to be economically viable. This is especially the case for projects with high transaction costs, such as community solar, or projects with low margins, such as those serving for low-income households. This section identifies additional actions to improve the economics of solar, reduce reliance on federal tax incentives, and improve access for all customers.

3.9.1 Net Metering

³⁸ For additional discussion of low-income solar models, see: <https://www.cesa.org/assets/2017-Files/Bringing-the-Benefits-of-Solar-to-Low-Income-Consumers.pdf>.

The current net metering project size cap is 100 kW per project.³⁹ This size limit prevents installers from achieving economies of scale that could bring down the price per watt. A variety of institutional installations, such as those at schools, universities, or municipal facilities, have loads large enough to warrant solar installations larger than 100 kW. Some utilities have voluntarily net metered systems larger than 100 kW for their customers, but the diversity among utilities in the state inhibits widespread development.

Further, the cumulative capacity of renewable systems that each utility is required to meter is currently 0.5 percent of its 1996 load.⁴⁰ Several utilities in Washington have already reached that threshold, and there is uncertainty around whether new solar systems will be net metered. This introduces uncertainty and additional cost to develop solar projects. A study by the National Renewable Energy Laboratory compared state net metering thresholds and determined that Washington is tied for the second lowest net metering threshold in the country.⁴¹ Most states have net metering threshold between 1 and 5 percent, though Vermont and Utah have 15 and 20 percent thresholds, respectively. Increasing the net metering threshold would provide stability for the solar industry, and would align Washington with the policies of states with more robust solar markets.

Policy Action: Increase the net metering project size cap from 100 kw to 500 kw.

Policy Action: Increase the net metering threshold from 0.5% of utilities' 1996 load.

3.9.2 Net Metering Administration

With over 60 utilities in the state, many of which serve rural areas, there is a wide range in the capacity of utility staff to administer programs associated with net metering and interconnection of solar installations. Providing direct technical assistance, perhaps through the Department of Commerce or the Washington State University Energy Program, for administering these programs could help smaller utilities provide standard processes that save staff time and provide consistency for the solar industry.

Policy Action: Provide technical assistance for consumer-owned utilities for administering net metering and renewable energy interconnection.

3.9.3 Energy Independence Act

The renewable energy targets currently established by the Energy Independence Act do not increase beyond 2020. Many states have updated their renewable energy targets to increase the required percentage of renewable energy beyond 2020 or above Washington's 15 percent.⁴²

Additionally, several states have established carveouts for specific types of renewable energy projects. New Jersey, has one of the largest markets in the country for Solar Renewable Energy Credits, which are required to meet a portion of the state's Renewable Energy Standard.⁴³ Colorado's 2010 Community Solar Garden Act requires utilities to acquire a certain amount of their Renewable Energy Standard obligation with community solar (solar gardens), of which 5 percent of the participation must be reserved for customers at less than 185 percent of the federal poverty limit.⁴⁴ Oregon established a carveout

³⁹ [RCW 80.60.010\(10\)\(a\)](#).

⁴⁰ [RCW 80.60.020\(1\)\(a\)](#).

⁴¹ Heeter, J., Gelman, R., and Bird, L. *Status of Net Metering: Assessing the Potential to Reach Program Caps*. National Renewable Energy Laboratory, 2014. Page 5. <https://www.nrel.gov/docs/fy14osti/61858.pdf>

⁴² <http://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx>

⁴³ http://www.srectrade.com/srec_markets/new_jersey

⁴⁴ C.R.S Section 1. 40-2-127. https://leg.colorado.gov/sites/default/files/images/olls/2010a_sl_344.pdf

requiring 10 percent of community solar generation to be available for use by low-income customers.⁴⁵ The legislature could also consider establishing a carveout or multiplier for solar, community solar or low-income service, similar to the apprenticeship multiplier for meeting Washington’s Renewable Energy Standard.⁴⁶

Policy Action: Revise the Energy Independence Act to increase renewable energy targets beyond 2020.

Policy Action: Establish Energy Independence Act carve-outs or multipliers for low-income and/or community solar.

3.9.4 Capacity Incentives

Although Washington is unique in offering a state production incentive for renewable energy generation over multiple years, several states around the country provide an up-front incentive per kW of installed capacity. For example, the California Single- and Multi-Family Affordable Solar Homes programs (SASH and MASH respectively) offer incentives of \$3 and up to \$1.80 per watt installed, respectively. Since 2009, over 7500 projects representing over 50 MW of capacity have been installed through the SASH and MASH programs.⁴⁷ Additionally, New York, Nevada, Oregon, and New Hampshire offer up-front incentives ranging from \$0.02 to \$0.50 per watt installed, all of which have led to substantial growth in installed capacity. This approach aligns the issuance of the incentive with the upfront cost of installing the equipment, providing greater certainty and earlier offset of costs for property owners.

Policy Action: Establish a capacity incentive per kW for underserved sectors, such as low-income households.

3.9.5 State Sales Tax Exemption

The sales tax exemption for smaller solar projects reduced the cost of installation by roughly 10 percent. Allowing the sales tax exemption to expire in October effectively increased the cost of installing solar by approximately 10 percent. Given the challenges of making publicly-oriented projects economically viable, the cost of the sales tax could be the deciding factor for some projects. If the Legislature does not want to re-establish the tax exemption universally, it could make the exemption available only to entities that do not pay federal taxes, such as government entities and nonprofits.

Policy Action: Reinstate the state sales tax exemption for solar projects less than 500 kW.

4. Energy Storage Financing

Energy storage is still in the early stages of market development, and consequently financial models may not fully monetize the range of value streams created by storage. As the tools for quantifying the varied value streams of energy storage become more mature, individual storage projects will become more economically viable and easier to finance. Utility storage projects have been driven by the need for frequency regulation, outage mitigation and integration of variable renewable resources. Customer-

⁴⁵ O.A.R 860-088-0005 through 860-088-0190.

⁴⁶ [RCW 19.285.040\(2\)\(h\)\(i\)](#).

⁴⁷ For more information about the California Solar Initiative, see: http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy/Energy_Programs/Demand_Side_Management/2017CSIAPA_FINAL_06.29.17.pdf

installed storage equipment is often paired with renewable energy systems, so many of the financing models discussed above are applicable to financing storage equipment. This section describes additional state involvement in financing energy storage deployment.

4.1 Clean Energy Fund

The Clean Energy Fund (CEF), managed by the Washington State Department of Commerce, distributes appropriations from the state capital budget to invest in clean energy development and deployment.⁴⁸ It was created in 2013, with a \$36 million capital budget appropriation, and received an additional \$40 million allocation in 2015. Funds are used for research, development, and demonstration (RD&D) of clean energy technology and projects through several tracks that include grants to revolving loan funds, utilities, and bond issuances for renewable energy manufacturing.

The Clean Energy Fund has successfully awarded almost all of the \$76 million total allocated to CEF1 and CEF2 for energy storage demonstration projects, development, and research. Three storage demonstration projects by Avista, Puget Sound Energy, and Snohomish PUD were awarded over \$14 million from CEF1.⁴⁹ An additional \$2 million was awarded to Pacific Northwest National Lab (PNNL) and Snohomish PUD as federal matching funds for projects focused on developing energy storage software, control strategies, and battery technology. Awards from CEF2 have been granted for utilities to advance grid modernization, and to various startups, and PNNL for further development of battery storage systems and software.

These demonstration and research projects are essential to building the use cases for energy storage, which will inform future deployment of storage. For example, Puget Sound Energy's Glacier battery storage successfully provided six hours of energy during a planned outage to the local service area, and Avista has successfully utilized their energy storage project in Pullman to manage peak loads during summer heat waves. Collaboration between utilities and PNNL has not only strengthened the use cases for storage, but has helped to establish local capacity for the manufacture and development of storage technology.

What actions are needed to support this model in Washington? The early investments by the Legislature have been essential to the build out of energy storage in Washington, but there is additional research and experience needed to expand the energy storage market.

Policy Action: Continue to allocate funds from the state capital budget to the Clean Energy Fund for energy storage projects.

4.2 Energy Storage Mandates

As the value streams and economic value of energy storage become more demonstrable, states have adopted mandates to procure energy storage capacity as a standalone policy or as part of an RPS. In 2013, the California Public Utility Commission established an energy storage procurement target of 1.325 MW for California's three IOUs by 2020. Legislation was passed by the Oregon Legislature in 2015, requiring electric utilities with more than 25,000 customers to acquire storage systems with capacity to store at least 5 megawatt-hours (MWh) of energy by 2020.⁵⁰ Since 2016, Massachusetts, New York, and Nevada have

⁴⁸ For more information on the activities of the Clean Energy Fund, see: <http://www.commerce.wa.gov/growing-the-economy/energy/clean-energy-fund/>

⁴⁹ For more information about Clean Energy Fund 1 awards, see: <http://www.commerce.wa.gov/wp-content/uploads/2017/04/Commerce-Clean-Energy-Fund-2017.pdf>

⁵⁰ ORS 757.539.

also passed legislation requiring their respective public utility commissions to establish energy storage procurement targets. Although mandates are not a financing model, they drive market investment in energy storage and reduce lender risk.

What actions are needed to support this model in Washington? Any consideration of energy storage mandates should involve detailed study of the need, costs and benefits of energy storage for Washington utilities. This type of information is being acquired through the energy storage demonstration projects supported by CEF grants. Consideration of energy storage mandates should build on the experience and data from these demonstration projects.

5. Electric Vehicles and Charging Infrastructure Financing

Compared to solar, the models for financing EVs are more mature, while the models for financing charging infrastructure are less mature. This section describes approaches to financing vehicles and charging infrastructure separately, and includes potential actions to expand EV adoption in Washington.

5.1 Electric Vehicles

The market for EVs in Washington State is one of the most robust in the country. According to the Alliance of Automobile Manufacturers, Washington is second only to California in percentage of EVs, at 2.23% of light duty vehicles sold in the State in the past year.⁵¹ Washington is fourth in the nation in total number of EVs sold, in a tight cluster with New York and Georgia behind California. Washington's sales tax exemption is widely believed to be a major driver of public adoption of EVs compared to other states, though the Department of Commerce expects that the program is likely to reach the 7,500 vehicle cap in early 2018. Georgia previously offered a \$5,000 state income tax credit, but the state legislature eliminated the tax credit in 2015 and introduced a \$200 registration fee. These actions caused EV sales in Georgia to drop about 90 percent.⁵² While Washington's state sales tax exemption is not nearly as large as Georgia's income tax credit, the impact of reaching the sales tax exemption cap could significantly dampen public adoption of EVs. The possibility of elimination of the federal tax credit makes the state sales tax exemption all the more important in the near term, until about 2019 when EVs are expected to become cost comparative to internal combustion engine vehicles.

Policy Action: Increase the vehicle cap and extend the sunset of the EV state sales tax exemption.

Beyond consumer adoption, the State encourages public or corporate fleets to convert to electric vehicles. The State Master Contract managed by the Department of Enterprise Services (DES) includes EVs and electric vehicle charging infrastructure.⁵³ DES requested that the bids from dealers reflect the value of the federal Investment Tax Credit. The Master Contract is available to state agencies, cities, counties, schools, public utility districts and other organizations that have signed a Master Contracts Usage Agreement.

⁵¹ <https://autoalliance.org/energy-environment/zev-sales-dashboard/>

⁵² <http://www.myajc.com/news/state--regional-govt--politics/here-why-electric-car-sales-are-plummeting-georgia/INGjfnDMALGkv2iUzwwXIO/>.

⁵³

<https://des.wa.gov/sites/default/files/public/documents/ContractingPurchasing/AlternativeFuelVehiclesOnContract.pdf>

State agencies and local governments are required by RCW 43.19.648 to fuel publicly owned vehicles, vessels, and construction equipment with electricity and/or biofuels, to the extent practicable.⁵⁴ To support public adoption of EVs, the Department of Commerce and DES are working to maintain a total cost of ownership spreadsheet that includes purchase or lease cost, operations and maintenance, depreciation, and resale or surplus value for EVs compared to traditional models. Due to the rapid proliferation of new EV models, keeping the total cost of ownership spreadsheet up to date is a challenge.

5.2 Electric Vehicle Charging Infrastructure

Similar to energy storage, EV charging networks are in the early stages of buildout. Multiple private companies are in the process of building out networks, primarily on private property, at the same time as state agencies and municipalities are building out charging infrastructure to meet their own or public needs. The business case for installing charging equipment on private property often relies on attracting customers to stay at the business for an extended time and expectations of increased EV market penetration in the future. Without a clear near-term business case, public investment in EV charging infrastructure has ramped up to ensure equitable deployment across cities and the state. At the moment, most private networks and statewide public investments are directed toward Level 3 fast charging. However, there is much less activity supporting Level 2 charging, which primarily serves workplace charging and EV usage within metropolitan areas.

5.2.1 Public investment. The Washington State Department of Transportation (WSDOT) manages the Electric Vehicle Infrastructure Pilot Program (EVIPP), which provides matching grants to municipalities or community partnerships for direct current Level 3 fast charger installations along certain high traffic corridors across the state. The first \$1 million round of grants was matched by \$1.5 million from grant recipients for installation of fast chargers, which can cost between \$30,000 and \$100,000 depending on location. Funding for the EVIPP program is generated by the \$150 per year EV registration fee, of which \$50 of each registration is directed to EV charging infrastructure. As more EVs are registered in Washington, the EVIPP program will have more funds to invest in infrastructure.

Additionally, WSDOT and the Washington Department of Ecology are developing the state plan for allocating the nearly \$17 million in funds Washington will receive from the Volkswagen Clean Air Act Civil Settlement. The EVIPP and Volkswagen funds are largely directed toward Level 3 fast charging, though the Volkswagen funds may include Level 2 charging in the future.

5.2.2 Utility investment. Investor-owned electric utilities are authorized to earn an incentive rate of return on investments into EV charging infrastructure deployed for the benefit of ratepayers.⁵⁵ Expenditures are eligible so long as they do not increase costs to ratepayers by more than 0.25 percent. The incentive rate of return must be approved by the UTC, though to date none of the investor-owned utilities have made a proposal to the UTC. Avista and PSE are currently implementing pilots related to EV charging, and may consider rate of return proposals in the near future. Although the investor-owned utilities have the authority to recover costs from EV charging infrastructure, it is unclear whether consumer-owned utilities have similar authority. To simplify the recovery of EV charging infrastructure investments, the UTC could allow utilities to create program-specific tariff riders or trackers.

⁵⁴ See also [WAC 194-28](#) for state agencies and [WAC 194-29](#) for local governments.

⁵⁵ [RCW 80.28.360\(1\)](#).

Policy Action: Allow consumer-owned utilities to recover costs of electric vehicle charging infrastructure through rates.

Policy Action: The UTC has the authority to allow recovery of investor-owned utility electric vehicle charging infrastructure investments through tariff riders or trackers.

5.2.3 Bond Issuance. Municipalities, or other agencies authorized to issue general obligation debt, seeking to invest in public charging infrastructure may be able to take advantage of low-interest bond issuances through the LOCAL Program through the Office of the State Treasurer. The LOCAL program issues bonds on a semi-annual basis, and maximum terms are set by the useful life of the equipment. The LOCAL program can be a useful option for equipment and short-term needs such as lease payments for which it would be difficult to finance in a single bond issue.

The Washington State Housing Finance Commission issues certain types of bonds on behalf of municipalities and other agencies, and could support infrastructure projects that do not fit the LOCAL program, with additional authority to issue infrastructure bonds. The Commission envisions issuing infrastructure bonds for larger projects on behalf of the cities and counties that cannot access the bond market at a reasonable price. Commission-issued infrastructure bonds would help achieve a rated bond issue for a pool of electric vehicle charging infrastructure projects and in that way lower the cost of financing projects.

Policy Action: Expand the Washington State Housing Finance Commission’s authority to issue infrastructure bonds for governmental and quasi-governmental entities.

Building Codes, Standards and Zoning. Washington State Building Code requires specific building types with 20 or more parking spaces to install EV charging equipment to serve 5 percent of the parking spaces, or make the site EV charging ready.⁵⁶ Additionally, electrical equipment rooms must be designed to support EV charging stations serving 20 percent of the parking spaces, and one accessible parking space must be served by a charging station. These requirements apply to new construction business, hotel and motel, and multifamily residential buildings.

Cities and counties in Washington are required to allow electric vehicle infrastructure within one mile of certain highways.⁵⁷ Jurisdictions may pass zoning ordinances requiring or enabling EV charging infrastructure along other corridors as well. Electric vehicle infrastructure permitting may involve multiple city or county departments, so in order to actively encourage charging infrastructure, especially Level 2 charging, cities and counties should streamline the permitting process as much as possible.

Policy Action: Provide technical assistance to cities and counties to streamline the process of permitting Level 2 charging.

The Washington State Housing Finance Commission and the Department of Commerce require that affordable housing funded or financed by each agency must meet the Evergreen Sustainable Development Standard.⁵⁸ Although the standard requires or encourages affordable housing to have access to public transportation and vehicle share programs, it does not address electric vehicle charging infrastructure. In consultation with housing stakeholders, the agencies should explore the extent to which electric vehicle

⁵⁶ Washington State Building Code, Section 427.

⁵⁷ <http://mrsc.org/Home/Explore-Topics/Environment/Energy-Topics/Planning-for-Electric-Vehicles.aspx>

⁵⁸ <http://www.commerce.wa.gov/building-infrastructure/housing/housing-trust-fund/housing-trust-fund-evergreen-sustainable-development/>

charging infrastructure should be addressed in the next iteration of the Evergreen Sustainable Development Standard.

6. Recommendations

The sections above identify actions that could be taken to enable or improve specific financing models. Certain actions will have greater impact or ease of implementation than others. Given the critical window to take advantage of meaningful tax credits and incentives within the next two or three years, the recommendations are prioritized based on our judgement of the impact on the energy market in Washington and the degree to which the actions could be implemented within the next few years. In that context, we recommend that the Legislature or the appropriate state agencies prioritize the following actions to support financing for distributed energy assets, as shown in Table 2.

Table 2. Prioritization of Policy Recommendations

Technology	Policy Recommendation	Priority
Solar	Allow customers purchasing renewable energy through a PPA to be eligible for the Renewable Energy Cost Recovery Incentive.	High
Solar	Provide clarity regarding the UTC’s jurisdiction to regulate third party owners of renewable energy systems.	High
Solar	Allow customers leasing renewable energy equipment from a third-party owner to be eligible for the Renewable Energy Cost Recovery Incentive.	High
Solar	The Department of Enterprise Services has the authority to develop standard contracts for or permit project-specific PPAs between ESCOs and Energy Performance Contracting participants that accommodate ESCO ownership of solar equipment.	High
Solar	The Washington State Housing Finance Commission could serve as a facilitator for housing authorities to administer community solar.	High
Solar	Increase net metering project size limit from 100 kw to 500 kw.	High
Solar	Increase net metering threshold from 0.5% of utilities’ 1996 load.	High
EVs and Charging Infrastructure	Allow consumer-owned utilities to recover costs of electric vehicle charging infrastructure through rates.	High
EVs and Charging Infrastructure	Expand the Washington State Housing Finance Commission’s authority to issue infrastructure bonds for governmental and quasi-governmental entities, including for EV charging infrastructure.	High
Solar	Allow the Department of Enterprise Services to include solar as part of new construction or as standalone projects in Energy Savings Performance Contracting.	Medium
Solar	Revise the Energy Independence Act to increase renewable energy targets beyond 2020.	Medium
Solar	Establish Energy Independence Act carve-outs or multipliers for low-income and/or community solar.	Medium
Solar	Reinstate state sales tax exemption for solar projects less than 500 kW.	Medium
Storage	Continue to allocate funds from the state capital budget to the Clean Energy Fund for energy storage projects.	Medium
EVs and Charging Infrastructure	Increase the vehicle cap and extend the sunset of the EV state sales tax exemption.	Medium
EVs and Charging Infrastructure	Provide technical assistance to cities and counties to streamline the process of permitting Level 2 charging.	Medium
Solar	Require utilities to provide monthly bill-crediting for community and shared solar projects, and provide incentives to help utilities configure their billing systems for bill-crediting.	Low
Solar	Provide technical assistance for consumer-owned utilities for administering net metering and renewable energy interconnection.	Low
Solar	Establish a capacity incentive per kW.	Low
EVs and Charging Infrastructure	The UTC has the authority to allow recovery of investor-owned utility electric vehicle charging infrastructure investments through tariff riders or trackers.	Low

Many of the financial models or market structures for financing distributed energy assets that we explored are already authorized or used in Washington. A suite of specific actions, targeted for individual financial models or markets can improve the access of these projects to federal and state financial incentives. In light of changing federal policy, it is important for the Legislature to build on the successful policies already in place in Washington and broaden the accessibility to project sponsors that otherwise would not be able to participate.

Much of the activity in financing distributed energy assets is outside of the scope of the Washington State Housing Finance Commission's work. However, we recognize a few specific areas where the Commission can play a significant part in advancing publicly-oriented projects. The Commission sees a natural role in working with housing authorities to facilitate the development of community solar, and is excited to pursue that initiative.

Similarly, the Commission has a proven track record of issuing bonds to assist municipalities and public entities in developing projects with public projects. With explicit authority to issue bonds for infrastructure projects, the Commission could support the buildout of publicly accessible electric vehicle charging networks around the state.

Although many of the recommendations in this report are simple policy changes, some would affect the state budget. Any recommendation with budgetary implications should be fully analyzed, with consideration for the sources of additional needed revenue.

This report does not discuss carbon pricing because the economic impacts extend far beyond distributed energy tax credits and financing. Carbon pricing could provide an additional source of revenue to implement some of the recommendations in this report, but we felt that evaluation of carbon pricing was beyond the scope of this report. Such a program would affect the broader state economy, and extensive analysis of various approaches to carbon pricing should be conducted by other entities.

As the Legislature considers actions to support the growing clean energy industry in our state, it is important to consider actions that support projects that provide substantial public benefit. The recommendations identified in this report provide a clear pathway forward to expand access to existing financial benefits and improve the policy mechanisms already in place to support energy investment.

7. Acknowledgements

This study drew on expertise of individuals in the energy industry in Washington State and around the country. We would like to thank everyone who participated in interviews, shared valuable resources, and provided external review, for their contribution to this report, including:

- Reeves Clippard and Bonnie Hemphill, A&R Solar
- Jeremey Keller, Ameresco
- Kelly Magalsky, Avista Corporation
- Chris Bast & Andrea Pratt, City of Seattle
- Charlie Coggeshall, Clean Energy Collective
- Robert Sanders and Seth Mullendore, Clean Energy Group
- Uday Varadarajan, Climate Policy Initiative
- Chris Jedd, Denver Housing Authority
- Patrick Leslie, Doosan GridTech
- Zack Henkin, Forth Mobility
- Tim Sears & Shamir Chauhan, GRID Alternatives
- Andy Satchwell, Jeff Deason and Greg Leventis, Lawrence Berkley National Lab
- Beth Galante, PosiGen
- Ben Farrow, Puget Sound Energy
- Yochi Zakai and Brendan O'Donnell, Seattle City Light
- Solar Plus partners
- Jaimes Valdez, Spark Northwest
- Alice Ostdiek, Stradling Yocca Carlson & Rauth, P.C.
- Dan Siegel, US Bank
- Peter Moulton and Jasmine Vasavada, Washington State Department of Commerce
- Doug Kilpatrick, Washington State Department of Enterprise Services
- Tonia Buell, Washington State Department of Transportation
- Brad Cebulko, Washington State Utilities and Transportation Commission