

STREAMLINED INTERCONNECTION FOR SOLAR PV

Evergreen State Solar Partnership

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BACKGROUND

The Evergreen State Solar Partnership (ESSP) convened by the Washington Department of Commerce is a team of four jurisdictions and their load serving utilities that aims to reduce soft costs of installing solar by streamlining and standardizing the permitting and interconnection process. Northwest SEED facilitated a work group within the ESSP to focus on the interconnection process and potential improvements. The work group has inventoried the current interconnection processes and charted a path to streamlining and standardization at the four partner utilities: Puget Sound Energy (PSE), City of Ellensburg, Seattle City Light, and Snohomish PUD. This report presents a survey of existing interconnection processes, suggestions for best practices, and an action plan for achieving streamlined processes and forms. In addition, the report suggests the potential for creating a standard Interconnection Application that could be used by multiple utilities, with minimal customization. The goal is to suggest streamlined and standardized processes that could be adopted by the ESSP core members, and ultimately by utilities across the state to reduce the cost and effort of interconnecting solar customers.

In Washington State, the Utilities and Transportation Commission (UTC) regulates the interconnection process for the investor owned utilities, which serve approximately 45% of the state's 2.5 million residential electric customer accounts. The other 55% of residential customers are served by Munis, PUDs, or Coops, which are not regulated by the UTC. Although UTC regulation affects less than half of Washington's residential customers, a majority of Washington utilities agreed on common interconnection standards in 2006, and they continue to work closely with the UTC to ensure that regulated and unregulated utilities follow similar standards as the regulations change over time. The ESSP Interconnection work group is actively participating in the current Docket to revise interconnection standards. However, even where utilities agree to the same interconnection standards, the particular processes and forms for interconnection vary between utilities, making it necessary for installers to follow different processes in different territories. This report focuses on **process** improvements that can be made within the existing interconnection standards framework.

To prepare this report, Northwest SEED interviewed utility staff and solar installers, and retrieved public documents from the web to gain a portrait of the interconnection process as experienced by a customer/installer in each utility service area. For each utility, we created a flow chart of the interconnection process, including the interconnection application, inspection, metering, and Dept. of Revenue (DOR) incentive application process. We intentionally include the metering and DOR application in our analysis of the interconnection process because they add time and cost to the process, and we see potential to streamline these processes, eliminating redundant steps and duplicate information submittals. In addition, we reviewed the Department of Energy's Solar Metrics database entries, to ascertain how each partner utility scored on their current interconnection process. Although DOE scoring is opaque, the range of multiple-choice answers suggest that one end of the spectrum represents "best practices" in current DOE thinking. We have also used the Interstate Renewable Energy Council's 2009

Model Interconnection Procedures as guidance on best practices and a standard for streamlined interconnection. The interconnection work group members convened by phone and in person, to share ideas and develop action plans for streamlining their own processes, while committing to work across utility lines to create a standard interconnection application. The interconnection work group discussions and work products form the basis of this report.

BEST PRACTICES

The DOE Solar Metrics database evaluates the interconnection process in four categories, Application, Information Access, Process Time and Inspection. The interconnection workgroup chose to use these categories to organize the best practices for interconnection.

Application

The interconnection application is the official paperwork a customer must complete to gain approval for interconnecting a PV system to a utility's grid. For inverter-based systems under 100 kW, all four participating utilities have their own application for interconnection, and a list of other required documents, such as a one-line diagram and inverter spec sheets. The paperwork varies significantly. The following best practices suggest how the application process could be streamlined.

Keep the application simple. It should not take more than a couple of hours to complete an Interconnection Application for a standard inverter-based rooftop solar system. Agreements and "terms and conditions" can be referenced in the application but contained in a separate document to minimize the amount of paper handling associated with each application. Several ESSP work group utilities already have simple applications, but could take it a step further by creating a standard form across all utilities. As a starting point, IREC's Model interconnection Procedures has a sample Interconnection Application that is two pages plus terms and conditions. Seattle City Light has adopted this format for their interconnection application. In addition, PSE has proposed to use an EZ Application that could be modified for use by multiple utilities. The ESSP will be meeting in October 2012, to begin work on a proposed template for standardization.

Example: Seattle City Light's interconnection application requires only two pages of customer information, with four pages of terms and conditions.

<http://www.seattle.gov/light/solar/Application.pdf>

Combine the application for interconnection with the application for a production meter, net metering and possibly DOR certification. Because Washington has a production incentive, interconnection customers not only apply for net metering, they almost always apply for production metering as well. The most streamlined application would contain the application for interconnection, net metering and production metering in a single application. Ideally, the application to the utility for a production meter should trigger the application to the DOR for certification for the state Production Incentive.

Example: Puget Sound Energy's [Sched. 150 Attachment A: Agreement for Interconnection, Net Metering, and Production Incentive](#) combines all three agreements in one document.

Make the application form easy to find online. All four participating utilities make their interconnection application forms available on-line, but they are sometimes difficult to find, or located in several different documents.

Example: Snohomish PUD offers all interconnection documents in a single, easy to find web location: <http://www.snopud.com/home/green/solarexpress/photovoltaic.ashx?p=1490>

Allow multiple ways to submit the application including on-line submittal. Customers increasingly use the internet to conduct business, and find it easy to provide documents electronically. Best practices allow for customers to submit applications on-line and by email. None of the ESSP utilities currently allow for on-line submittal, but the interconnection work group is investigating the potential of PowerClerk, an online software service to manage utility incentives. An online submittal would be especially valuable if the data were input into a system that could directly talk to the utility's other data sets, to eliminate double entry.

Example: NStar allows online submittal of an interconnection application, while still requiring follow-up hard copies of certain forms.

http://www.nstar.com/business/rates_tariffs/interconnections/simplified.asp

Information Access

Information about the interconnection process should be transparent to the contractor, the customer, and the utility staff. A customer should be able to learn where their application is in the process, what the criteria are for approval, and when to expect utility response. Where applications are processed quickly, there is less need for tracking every step of the process. However, if applications require several internal reviews or multiple touches before approval, it becomes more important to provide a window into the process.

Provide a single point of contact. The most streamlined process offers a single point of contact for every aspect of interconnection, including application submittal, inspection scheduling, meter installation, and production incentives. If these diverse activities are managed by different departments, then every department should have a list of who is handling each aspect of the project. By providing customers with one point of contact who can “see” the status of the entire project, the utility achieves a higher level of customer satisfaction. (The ESSP is exploring the idea that this interconnection point of contact could be coordinated with the permitting point of contact.)

Example: Ellensburg Municipal Utility provides a single point of contact for all solar interconnection issues, making it easy for customers to understand who to work with.

Make it easy for the customer to check the status of the application. Providing a single point of contact with visibility into the process will go a long way toward making it easy for the customer to check the status. In addition, the quicker the application is processed, the less need there is for answering customer queries as to the progress.

Process Time

Most of the ESSP work group utilities are already quite adept at processing standard interconnection applications, providing a response within a few days of receiving a complete submittal. As interconnection applications increase, it will be even more beneficial for utilities to have a simple, streamlined process for standard, inverter-based systems.

Approve standard applications within three business days. Although IREC's 2009 model interconnection procedures suggests that a utility could take seven days to approve an application, approval could be accomplished more quickly for inverter-based PV systems under 25 kW. At some utilities, the solar intake desk point of contact is empowered to approve "standard" applications for inverter-based systems using standard screens (e.g. screens for UL Listed equipment, inverter-based, less than 25 kW, line capacity, etc.).

Example: PSE empowers the customer renewable energy program manager to approve standard applications for inverter based systems. As a result, most applications are approved within 24 hours.

Inspection

The utility "Inspection" (which occurs after the electrical inspection) varies significantly from one utility to the next. In part, this is because we are using the term broadly, to include the utility inspection, meter installation, and the Department of Revenue certification process. (We are not including the inspection process that accompanies utility solar incentives, since that is a unique and optional process.) In general, most, but not all, utilities use the inspection to check for proper meter base placement and to test inverter function. Some utilities require a system to pass utility inspection before the system begins interconnected operation; others do not, allowing a system to begin operation as soon as it has passed electrical inspection. Some utilities use the inspection visit to install the necessary billing and/or production meters; others use the inspection visit to trigger a separate work order for meter installation. The following best practices include suggestions that interpret "Inspection" broadly, to include utility inspection and meter installation.

Make information on inspection requirements easy to access. Utilities that provide clear requirements for inspection find that installers learn quickly, reducing the incidence of failed inspections and wasted time. Meter placement diagrams, checklists of inspection requirements, and contact information for any questions will go a long way toward ensuring that installers understand what's expected. In addition, installers report that they appreciate receiving periodic updates from the utility on the latest inspection requirements and contact information.

Example: Snohomish PUD's [Solar Express Program Handbook](#) details the specific requirements for equipment and meter placement in one easy to reference document.

Reduce time from inspection request to actual inspection. Utilities do not schedule an inspection until they receive a “certificate of completion” attesting that the installation has passed electrical inspection. In other words, they do not receive an inspection request until the system is ready to begin production. (The utility may still need to replace a uni-directional billing meter with a net meter, or install a production meter, but the customer/contractor work is complete.) At this point, the customer is eager to begin production. Utilities can serve their customers and cut contractor costs, by making the inspection and enabling the beginning of production as soon as possible – preferably within ten business days or less.

Example: Seattle City Light endeavors to inspect systems within 24 hours of receiving the request and allows the system to begin production upon inspection, before the production meter is installed, by allowing the installer to use a jumper across the production meter base.

Provide a narrow window of time for the inspection. The longer installers must wait on-site for an inspection, the more cost they incur. All of the ESSP utilities already conform to industry best practices by providing installers with a set time for the inspection. In some cases, installers need not be present for the inspection, saving even more time and money.

Eliminate redundant site visits and inspections. There are three potential site visits (opportunities for inspection) after an installation is complete:

Purpose of Visit	Performing Entity	Activity
Electrical Inspection	Electrical Inspector (State or Local)	Check compliance with NEC
Utility Inspection	Utility Technician or Service Rep	Check meter placement, test inverters
Meter Installation	Utility Technician or Installer	Install production and/or billing meters

Could the electrical and utility inspections be combined? In theory, electrical inspectors could be trained to check meter placement and test inverter performance. However, electrical inspection is currently handled by various state and local jurisdictions, and to integrate with the utility inspection would require major training, not to mention reorganizing of traditional roles and coordination between entities that currently have little communication.

A more feasible option for streamlining inspections might be for the utility to combine visits such that one post-installation visit serves to check meter placement, test inverters and install production and billing meters.

A third option might be to eliminate the need for a utility inspection by deputizing qualified installers to perform the function. For example, conEdison, an East Coast utility, allows approved contractors to test and certify installations. Contractors sign a form attesting to the UL listing and the testing of the inverters, and send the form to the utility. However, as long as

Washington has a production incentive that requires a production meter, deputizing the contractors to certify the system may not eliminate the need for a site visit from the utility, because the utility may wish to install the production meter.

Example: Ellensburg Municipal Utility allows the installer to install the production meters, eliminating the wait for the utility to make the installation.

CURRENT PROCESS

Every utility has a unique interconnection process, a product of their business structure, staffing organization, and the age of their infrastructure. While utilities have the same basic process flow, variables such as meter type and software capability create different process details. The flowcharts in Appendices B - E show the interconnection process as it is currently practiced at each of the participating utilities. The flowcharts identify roles, communication modes, decision points and potential bottlenecks or redundancies in the process, and serve as an internal tool for evaluating the potential process improvements. While it is interesting to compare processes across utilities, the ESSP goal is not to standardize internal functions at every utility. We recognize that each utility has unique circumstances, and that internal paths will always vary, even as we pursue the goal of standardizing the external customer/contractor experience.

We have created a second chart to compare the four interconnection processes from the perspective of the customer/contractor, as they are characterized in the DOE SolarMetrics database. The following chart displays the information entered in the SolarMetrics database at the beginning of the Rooftop Solar Challenge project. Information in parentheses has changed since 2011, but the scoring has not been updated to reflect the change in data, and will not be updated by the DOE until February of 2013.

Interconnection: Current Practices

(from the Solar Metrics database with updates in parentheses)

	Snohomish PUD	Ellensburg	Puget Sound Energy	Seattle City Light
Score (110 Pts. Possible)	98	70	68	62
Application (40 pts)				
Time to complete Interconnection app	≤ half day	1-2 (≤ half day)	≤ half day	≤ half day
Options to obtain app	Online Email In person Mail	Online Email In person Mail	Online Email In person Mail	Online Email (at Service Center) Mail
Option to submit app	Online Email In person Mail	Email In person Mail	Email In person Mail	(At Service Center) Mail
Fee?	No, but Prod Mtr \$66	0 – 25 kW - \$100	No fee (\$100 in 2013?)	No, but Prod Mtr \$62
Info Access (20 pts)				
How does a customer get information about interconnection?	Online easily accessible Online Email In person/mail	Online easily accessible Online Email In person/mail	Online easily accessible Online Email In person/mail	Online easily accessible Online
Is there a Single Point of Contact w/contact info online?	Yes	Yes	Yes	Yes
How can a contractor/homeowner check the status of an application?	(Email, Call, In person)		Email, In person/mail	Email (Call ESR or CRD Prg Mgr)
Process Time (20 pts)				
Does Utility track time to approve IC app?	Yes	No, not applicable	No (but typically approved in 24 hrs)	Yes, date stamped
Typical time to approve IC application	6–10 (5-7) business days	3 business days	≤ 3 business days (1 b day)	6 – 10 business days
Inspection (30 pts)				
Time from Inspect request to inspection	3 – 5 days	3 -5 days	6 – 10 days	3 – 5 days
What is window of time given?	Specific Time	Specific time	Specific Time	Specific Time
How is info on inspection requirements made available to installers?	Online, Email, In person Mail	Not Available	Not Available	Email, In person

While these metrics provide a good starting point for assessing the interconnection process, they do not tell the whole story. For example, Washington State has a production incentive, which necessitates a production meter in order to receive incentives. Utilities may seek to streamline the installation of production meters by combining it with the utility inspection but this improvement in the process would not result in a higher SolarMetrics score. Nevertheless, we will pursue such improvements, as our goal is not only to improve the SolarMetrics scores, but to improve the on-the-ground experience of utility staff and installers by streamlining all aspects of interconnection in Washington State, including the installation of production meters.

BARRIERS

Utilities face several barriers to achieving a streamlined, standardized interconnection process.

Unique Barriers

Size of Organization: Very small utilities don't have the need or the budget to handle sophisticated online solutions such as PowerClerk. Large utilities could benefit from automated solutions, but face more institutional inertia and departmental integration issues.

Non-standardization of Meters: Meters represent a significant capital investment for utilities. Different meters necessitate different processes. Uni-directional digital billing meters must be replaced to begin net metering; bi-directional mechanical meters need not. Some utilities read meters remotely, making meter placement less important. As one utility pointed out, meter technology is evolving so quickly that by the time they are ready to make a decision on a new type of meter purchase, the product is already obsolete.

Complex Organizational Structure: Some structures lend themselves more easily to streamlining. For example, utilities that have consolidated handling of interconnection applications, meter installation, inspection, and incentive disbursement under one department can make changes in the process relatively easily. Other utilities divide these roles between different departments and managers, necessitating coordination between departments that share authority. Changing a process that is managed by many departments can be a challenge and an opportunity for getting all the staff pulling in the same direction.

Shared Barriers

Outdated Data Management Tools: Much of current utility process depends on and is constrained by the capability of inherited, outdated data management tools. In an era of shrinking budgets, it is not always possible to update data management systems to provide the optimal customer service. Utility staff find themselves "making do" with the tools at hand.

The Washington Department of Revenue incentive process is cumbersome. Each of the ESSP work group utilities has chosen to participate in the Renewable Energy Cost Recovery program, which allows utilities to divert a small percent of their taxes from the Department of Revenue to customers, as an annual production incentive. When customers submit for certification from

the Department of Revenue, they receive a letter with instructions that contradict current utility practice. The letter tells customers to submit an Annual Incentive Payment Application to their utility by August 1. However, each of the ESSP utilities provides their own form to customers with the production information completed and ready for signature, because customers do not have access to their production data. Customers who are eager to submit for their production incentive often submit incomplete applications using the DOR form, only to discover that the utility will be sending them their production information for confirmation.

Another complexity is that the DOR requires customers to apply for their incentive each year. The ESSP utilities alone have over 2,000 solar customers, and spend considerable time issuing the production information and following up with customers who have not returned their signed application or have not completed the DOR certification paperwork.

The ESSP interconnection working group has agreed to discuss possible improvements to the process, including the ideas that customers would not need to reapply each year and that a production incentive for small systems might be replaced by an annual payment based on estimated production. As the production incentive sunset of 2020 approaches, we have an opportunity to devise a more streamlined way to encourage investment in distributed generation, especially for the smaller systems such as the rooftop solar systems.

SOLUTIONS

Each utility in the ESSP interconnection work group came up with best practices for streamlining their process internally and they agreed to work together toward standardization of the Interconnection Application.

Recommendations for Streamlining

The following chart shows the commitments from each utility for adoption in the near, middle and long term.

ESSP Interconnection | Action Plan – September 2012

	Dec 2012	May 2013	Dec 2013
PSE	<ul style="list-style-type: none"> ◆ Create a Net Metering “EZ” form of 4 pages for solar inverter based systems under 25 kW. ◆ Add netmetering@pse.com to applications for business continuity. 	<ul style="list-style-type: none"> ◆ Update pse.com with check lists, standards, reverse rotation information. 	<ul style="list-style-type: none"> ◆ Institute online form for submitting applications. ◆ Remove requirement for utility grade production meter for state incentive?
SCL	<ul style="list-style-type: none"> ◆ Consider email option to submit IA ◆ Host contractor roundtable 9/24/2012. ◆ Add new online content for interconnection. ◆ Establish points of contact and post online. ◆ Clearly communicate to owner and contractor their assigned ESR with both letter and email. ◆ Discuss combined electrical/utility inspections with DPD and other jurisdictions. 	<ul style="list-style-type: none"> ◆ Evaluate online option for interconnection application submittal. ◆ Clearly communicate points of contact internally. ◆ Consider new goal of 3-4 days from inspection request to inspection. ◆ Make information on inspections easy to access: Add information to Interconnection Application and online. ◆ Consider a single 1-line drawing for permitting, interconnection and DOR certification. 	<ul style="list-style-type: none"> ◆ If feasible, implement online option. ◆ Redesign and launch renewable energy website. Produce new printed education & marketing collateral. ◆ Re-examine roles/POCs and revise as required. ◆ Amend internal Dept Policy & Procedures (DPP) to include the standard Application
Snohomish PUD	<ul style="list-style-type: none"> ◆ Make changes to internal processing of applications – further use of SAP for auto-population of forms 	<ul style="list-style-type: none"> ◆ Reduce time required to complete interconnection application with formatting shared across utilities. 	<ul style="list-style-type: none"> ◆ Reduce time for approving interconnection applications by reducing the number of touches in our internal process and streamlining data management. ◆ Create a Fast Track 10 kW inverter process.
Ellensburg	<ul style="list-style-type: none"> ◆ The application form is available on the Utility’s web site, can be emailed or mailed to the contractor or can be picked up in person at the utility reception desk. ◆ The web-site will identify the single point of contact who can give a status update to the homeowner and/or contractors 	<ul style="list-style-type: none"> ◆ A final inspection check-off list will be provided to the contractor in the application material and also when they are notified that their application is approved 	<ul style="list-style-type: none"> ◆ Enable the contractor to submit the application on line, be able to scan the electrical drawing and send it by email and make the application fee payment on line using a credit card

	<ul style="list-style-type: none"> ◆ They will be responsible to route the application around the department and assure that the application is approved in less than three days 		
ALL	<ul style="list-style-type: none"> ◆ Begin discussion of standard interconnection application template ◆ Propose changes to the DOR regarding the annual incentive process 	<ul style="list-style-type: none"> ◆ Evaluate, reach consensus on standard App and 1-line format. Issues include: disconnect requirement, fees, tier size. ◆ Refine recommendations for DOR process changes 	<ul style="list-style-type: none"> ◆ Adopt standard interconnection application and one line diagram ◆ Support implementation of changes in DOR process

Recommendations for Standardization

Currently, utilities each have their own Interconnection Application. They have agreed in theory to pursuing a standardized interconnection application that would include a standard, detailed one-line diagram, a standard project information template, and standard “agreements” with the exact wording customized. (For example, PSE customers agree to the terms of Schedule 80 while Seattle City Light customers agree to the terms of the Interconnection Standards.) The interconnection working group will meet in October, 2012, to begin crafting the standard interconnection application. The PSE proposed EZ form in Appendix A is a starting point.

OPPORTUNITIES FOR FEEDBACK

Survey

The ESSP team is interested in hearing from other jurisdictions, installers and customers on how we can work collaboratively to lower the soft costs of installing solar PV. [Please give us your feedback by taking a few minutes to complete this survey.](https://www.surveymonkey.com/s/esspintercon) (<https://www.surveymonkey.com/s/esspintercon>)

In addition, you can send comments directly to: rooftop@commerce.wa.gov

Project Contacts

Tim Stearns, WA Department of Commerce
(206) 256-6121 | tim.stearns@commerce.wa.gov

Jennifer Grove, Northwest SEED
(206) 267-2212 | jennifer@nwseed.org

RESOURCES

[International Renewable Energy Council \(IREC\) Model Interconnection Procedures 2009 Edition](#) provides template Interconnection Standards and Forms for Tier 1, 2 and 3 systems.

[National Renewable Energy Laboratory \(NREL\) Renewable Energy Contracts Library](#) – A website listing many resources to promote document standardization and aid in the successful development of renewable energy projects, including interconnection agreement resources.

[Small Generator Interconnection Agreement \(SGIA\) \(For Generating Facilities No Larger Than 20 MW\)](#) – The Federal Energy Regulatory Commission (FERC) adopted these standards for facilities subject to the jurisdiction of the commission. The FERC has noted that its interconnection standards for small generators should serve as a useful model for state-level standards.

[Small Generator Interconnection Procedures \(SGIP\) \(For Generating Facilities No Larger Than 20 MW\)](#) – The Federal Energy Regulatory Commission (FERC) information on their procedures for interconnection, which, like its agreement information, may be used as a guide for state-level standards.

[Database of State Incentives for Renewables and Efficiency \(DSIRE\)](#) – This website has a wealth of information about solar incentives and programs, including information on the FERC interconnection standards for small generators.

APPENDIX A: DRAFT EZ INTERCONNECTION APPLICATION

PUGET SOUND ENERGY

NET METERING – SOLAR PV OF 25 KILOWATT OR LESS

**Application and Agreement for Interconnection, Net Metering and Production Metering
(Solar PV System 25 kW or less using UL 1741 rated inverters)**

See Page 2 for details of the \$100 application fee and other applicable charges.

Date: _____

Account #: _____ Service Meter #: _____ (e.g. U123456789)

Account Holder: _____ (i.e. Name on PSE electric bill)

Alternate Contact: _____ (If different from the Account Holder. e.g. business point of contact or spouse/partner)

Interconnection Service Address: _____ Mailing Address: Same as Service Address

City: _____ City: _____

State: WA Zip: _____ State: _____ Zip: _____

E-mail Address: _____ Telephone: _____

Installation Application <input type="checkbox"/> Existing Building <input type="checkbox"/> New Construction	Building Type <input type="checkbox"/> Residence <input type="checkbox"/> Commercial Structure	Do you own the property? <input type="checkbox"/> Yes <input type="checkbox"/> No
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Solar Modules/Panels Manufacturer: _____ Model: _____ Number of modules: _____ Wattage per module (W): _____ Total array wattage (kW)*: _____ Using a UL 1703 rated module? <input type="checkbox"/> Yes <input type="checkbox"/> No
Inverter(s) Manufacturer: _____ Model: _____ Number of inverters: _____ Maximum rated output of the inverter(s) in total (kW)*: _____ Please check the appropriate inverter output voltage: <input type="checkbox"/> 120V 1φ (120 volt single phase) <input type="checkbox"/> 240V 1φ <input type="checkbox"/> 120/208V 1φ <input type="checkbox"/> 120/208V 3φ <input type="checkbox"/> 277/480V 3φ Using a UL 1741 rated inverter? <input type="checkbox"/> Yes <input type="checkbox"/> No
Back-up Generator <input type="checkbox"/> Yes (If Yes, show generator in system schematic.) <input type="checkbox"/> No
Battery Back-up <input type="checkbox"/> Yes (If Yes, show batteries in a three wire system schematic.) <input type="checkbox"/> No

*For generating systems with a nameplate rating larger than 5 kW or if connecting to an electrical service larger than a 320 amp service: An external locking visible break disconnect that meets PSE's standards is required.

PUGET SOUND ENERGY

Estimated total cost of solar installation. \$ _____

Did the owner self-install the solar facility? Yes _____ No _____

If no, please identify the name of the installer and/or designer of the solar facility:

Company Name: _____ Phone Number: _____

Charges and Other Requirements (Check all boxes that apply.)

- I understand a **non-refundable application fee of \$100** will be charged directly to my PSE electric bill upon submission.
- I have attached a system schematic for this facility, including the following: (See page 4 for example)
 - Solar modules
 - Inverter(s)
 - External locking visible break disconnect switch (if applicable)
 - Production meter (if applicable) – showing the correct line and load and distance from service meter
 - Connection to the structure's electrical service panel
 - Service/Net Meter
 - Batteries and back-up generation (if applicable)
- I agree to the terms and conditions of Interconnection under Schedule 80
- I agree to the terms and conditions of Net Metering under Schedule 150
- I agree to the terms and conditions of Production Metering under Schedule 151

Please see www.pse.com for complete Schedules.

- I am requesting service meter aggregation and understand the requirements and monthly service charge per the Net Metering tariff. Alternate service meter to be credited: _____

I agree to pay the following applicable production meter installation charge(s):

- 2S uni-directional meter = \$83 (additional meter = \$60 each)
- 2S bi-directional meter = \$363 (additional meter = \$330 each)
- 12S uni-directional meter = \$129 (additional meter = \$106 each)
- 12S bi-directional meter = \$404 (additional meter = \$371 each)
- 16S uni-directional meter = \$268 (additional meter = \$244 each)

The production meter charge is a one-time charge that appears on the customer's bill following meter installation. Most customers will see a one-time charge of \$83 on their bill for a production meter. Customers with three phase service, battery back-up, or back-up generators, may see higher charges for advanced, bi-directional, or multiple meters depending on their installation.

- I understand that PSE is required under applicable rules to disclose certain information about its Renewable Energy Production Incentive Payment Program to the state of Washington's Department of Revenue (The "DOR"), and I permit PSE to disclose personal information about my participation in this program to the DOR.
- I understand that in order to help ensure the safe, reliable and adequate operation of my solar facility, PSE may disclose certain information about my solar facility to my installer, and I permit PSE to disclose such information.

PSE must review and approve the application prior to interconnection.

PUGET SOUND ENERGY

The electrical permit number, issuing jurisdiction, and estimated date of complete generating facility inspection must be provided prior to meter installation. The account holder or installer must notify PSE that the generating facility has been installed and inspected in compliance with local building and electrical codes. Please email a certificate of completion to PSE (at the email address below) and be sure to include the following text:

"I certify that the generating facility located at _____ has been installed and inspected in compliance with local building and/or electrical codes. I have obtained electrical permit number _____ from the following electrical authority, _____ and passed electrical inspection on _____."

PSE Contact Information:
Please scan and email this Application and Agreement to:

Puget Sound Energy, Inc.
PO Box 97034 (EST-10E)
Bellevue, WA 98009-9734
Attn: Net Metering
Tel. (800) 562-1482
FAX (425) 456-2706
E-mail: netmetering@pse.com

IMPORTANT NOTICE:

This Application and Agreement shall be in effect when complete, signed and delivered by the Account Holder to PSE and signed by PSE, and it is subject to the General Rules and Provisions set forth in PSE's Electrical Tariff G, Schedule 80, and to Schedules 150, 151 and other schedules that may apply, the terms and provisions of which are incorporated herein. You may find these materials online at [insert URL links]. Such schedules may be revised from time to time upon approval of the Washington Utilities and Transportation Commission, and any conflict between the terms of this agreement and an approved tariff or schedule shall be resolved in favor of such tariff or schedule. Governing law shall be the law of the state of Washington.

By signing below, the Account Holder certifies that, to the best of their knowledge, the information provided in this application and agreement is true and correct. The customer generator also agrees to abide by the general rules and provisions for interconnecting a generating facility no larger than 25 kW.

ACCOUNT HOLDER:

PUGET SOUND ENERGY, INC.:

Signature: _____

Signature: _____

Print Name: _____

Print Name: _____

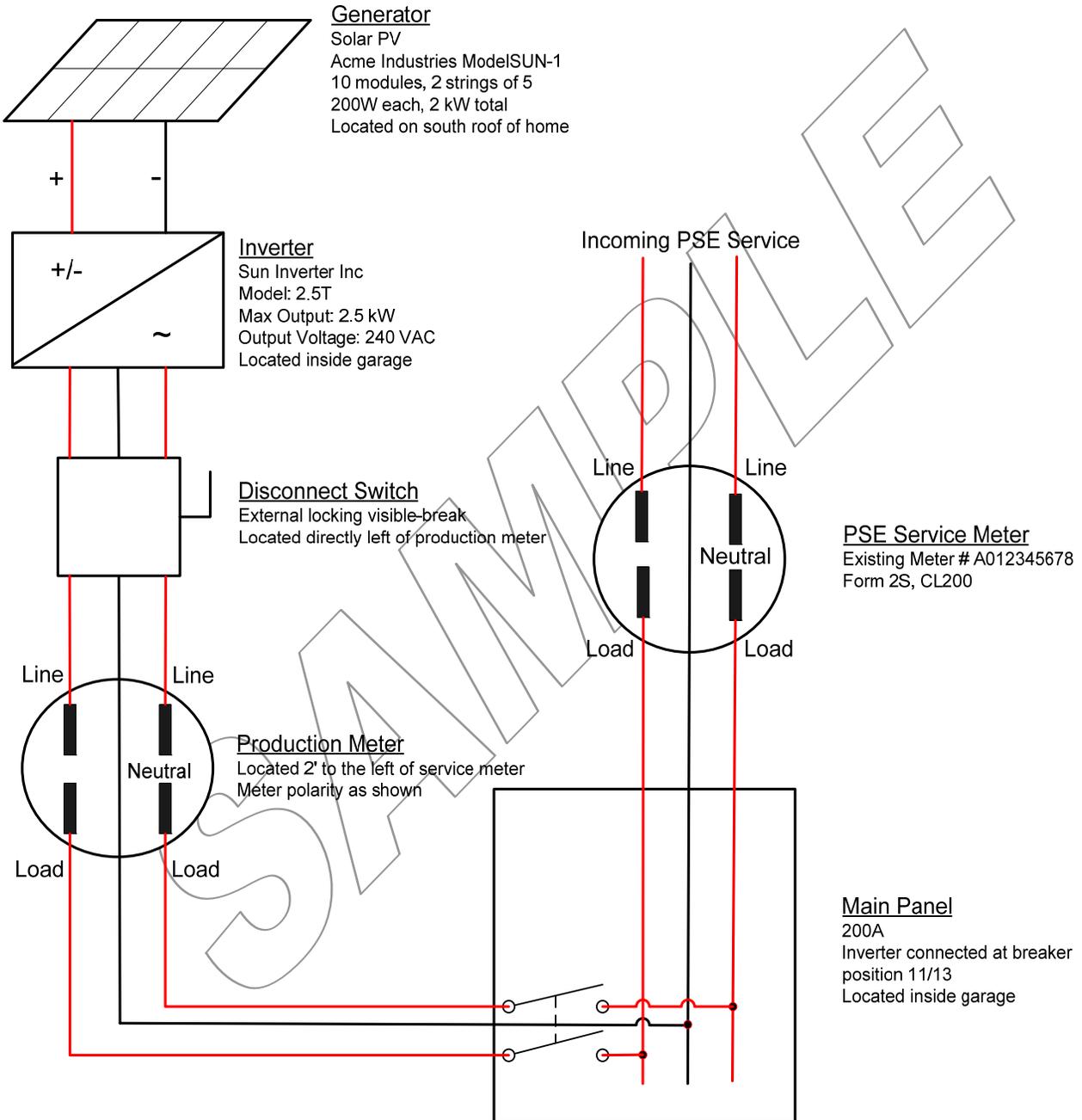
Date Signed: _____

Date Signed: _____

PUGET SOUND ENERGY

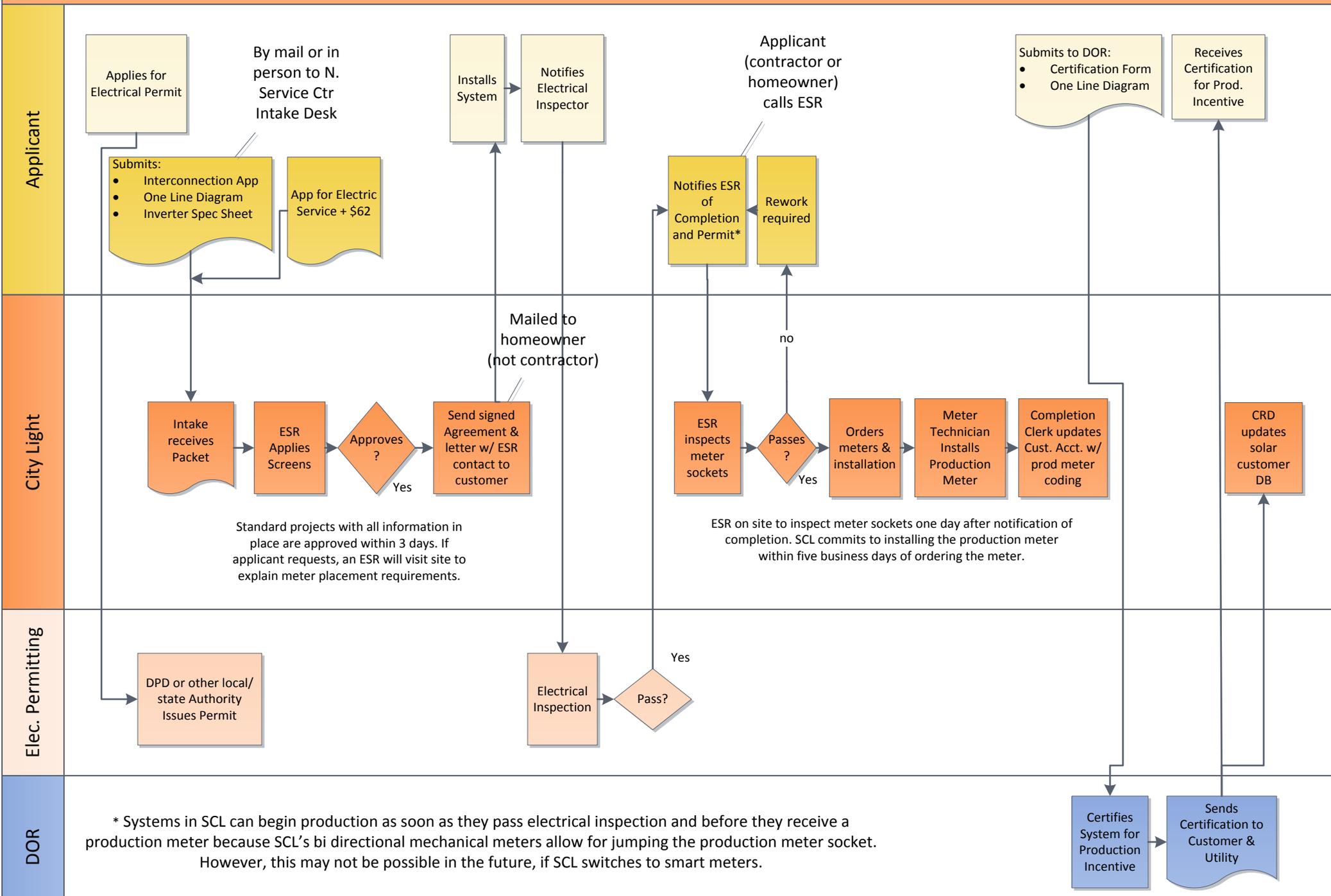
Attach System Schematic:

System Schematic Example:



APPENDIX B: SEATTLE CITY LIGHT INTERCONNECTION FLOWCHART

Interconnection, Net Metering, & Incentive Process – SCL Inverter based systems 100 kW or less

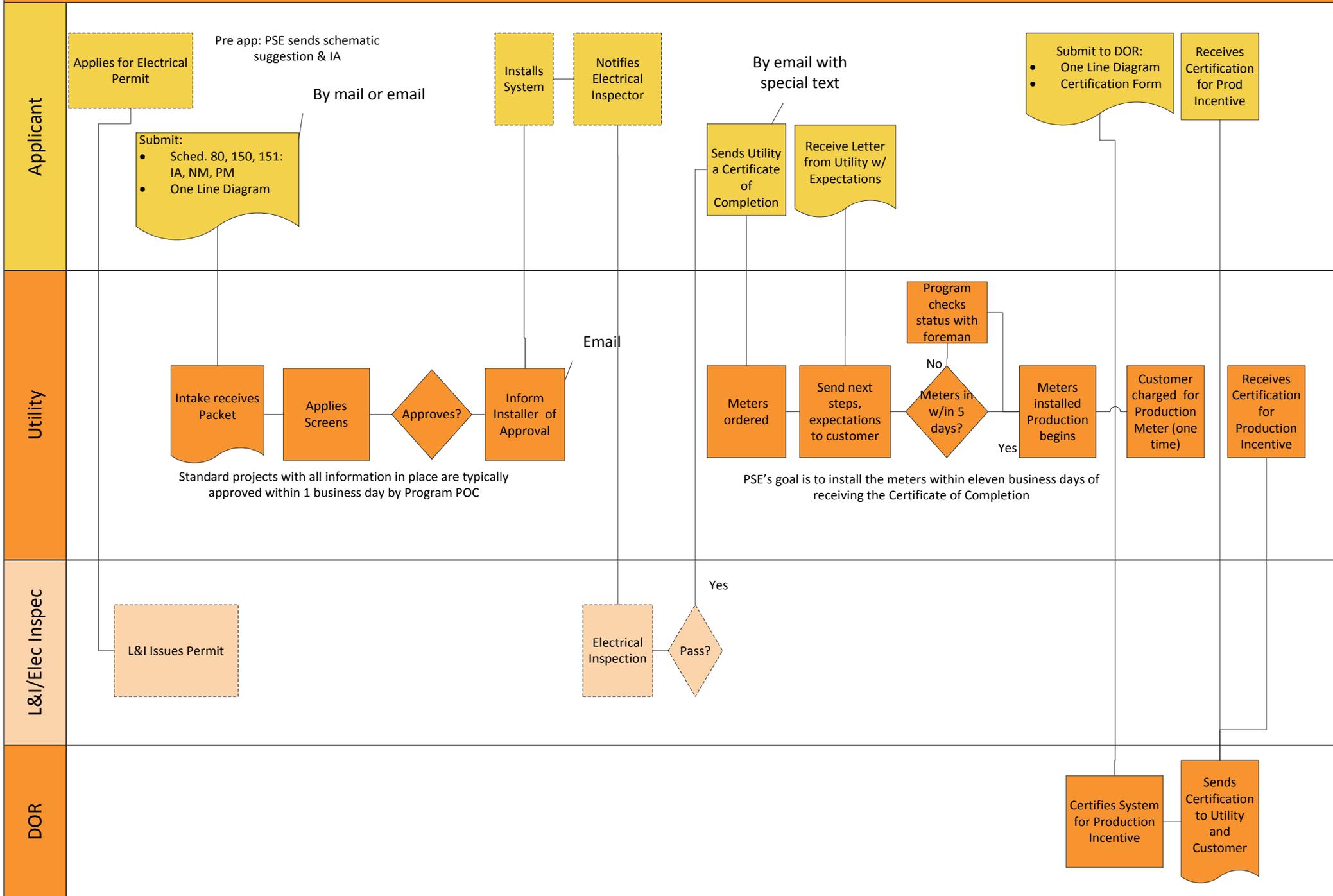


* Systems in SCL can begin production as soon as they pass electrical inspection and before they receive a production meter because SCL's bi directional mechanical meters allow for jumping the production meter socket. However, this may not be possible in the future, if SCL switches to smart meters.

APPENDIX C: PUGET SOUND ENERGY INTERCONNECTION FLOWCHART

Interconnection Net Metering & Incentive Process – PSE Inverter based systems 100 kW or less

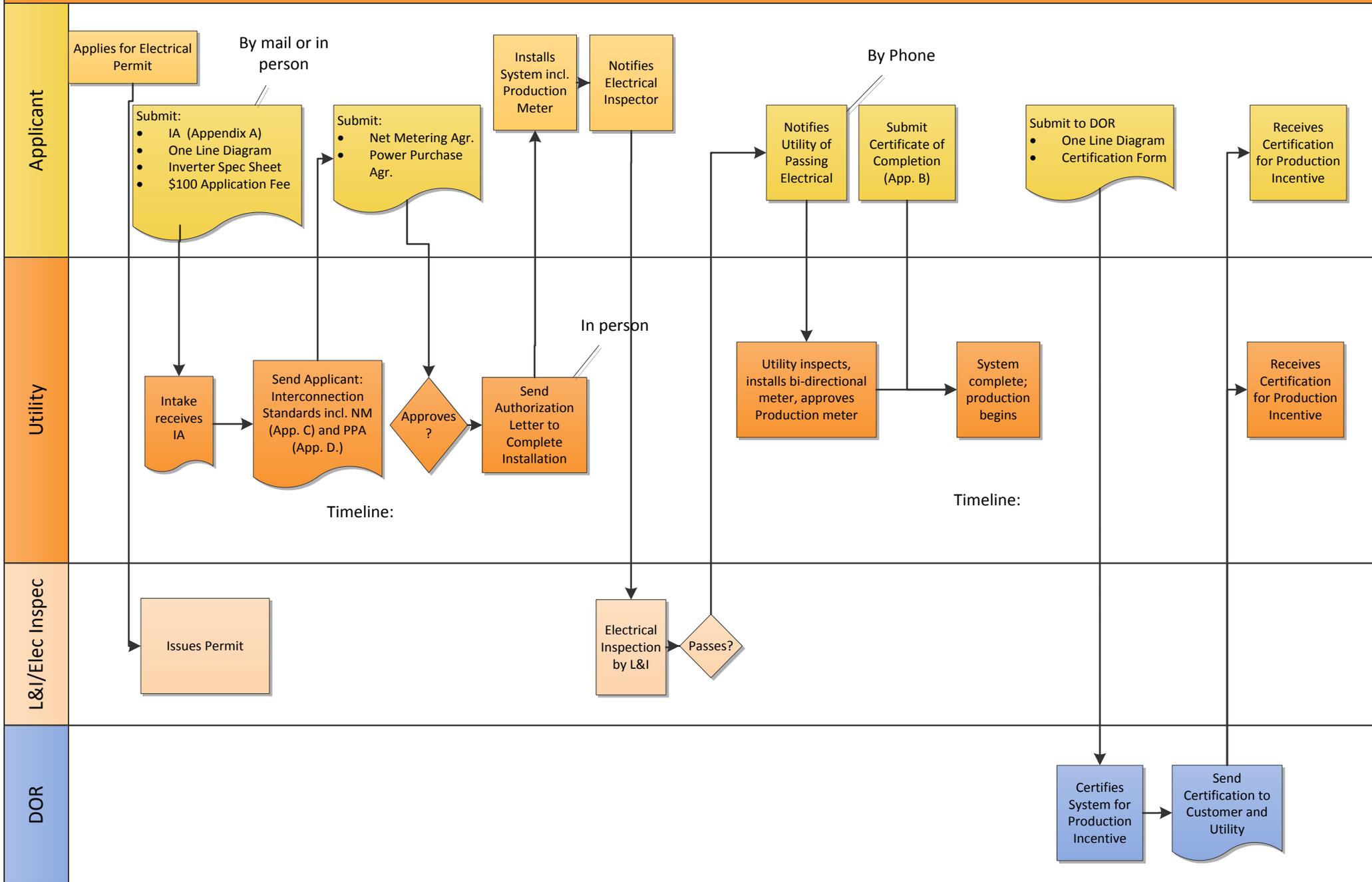
September 2012



APPENDIX D: CITY OF ELLENSBURG INTERCONNECTION FLOWCHART

Interconnection, Net Metering & Incentive Process – Ellensburg Inverter based systems 100 kW or less

September 2012



APPENDIX E: SNOHOMISH PUD INTERCONNECTION FLOWCHART

Interconnection, Net Metering & Incentive Process – SnoPUD Inverter based systems 100 kW or less

October 2012 (Note: To be consistent with other process flow charts, this process does not include the paperwork and inspection for Snohomish PUD's Solar Express Rebate Program.)

