

ORIGINAL



0000108041

RECEIVED  
2010 FEB 25 P 3:42  
AZ CORP COMMISSION  
DOCKET CONTROL

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS  
KRISTIN K. MAYES - CHAIRMAN  
GARY PIERCE  
PAUL NEWMAN  
SANDRA D. KENNEDY  
BOB STUMP

IN THE MATTER OF THE APPLICATION OF )  
UNS ELECTRIC, INC. FOR APPROVAL OF )  
ITS RENEWABLE ENERGY STANDARD )  
AND TARIFF IMPLEMENTATION PLAN. )

DOCKET NO. E-04204A-09-0347

NOTICE OF FILING

UNS Electric, Inc., through undersigned counsel, hereby files its final 2010 Renewable Energy Standard and Tariff ("REST") Renewable Energy Credit Purchase Program, REST Surcharge ("REST-TS1"), Customer Self-Directed Renewable Energy Option ("REST-TS2"), and the REST budget consistent with the revisions discussed in ACC Decision No. 71464 (January 26, 2010).

RESPECTFULLY SUBMITTED this 25<sup>th</sup> day of February 2010.

UNS ELECTRIC, INC.

By: Melody Gilkey

Philip J. Dion  
Melody Gilkey  
UNS Electric, Inc.  
One South Church Avenue, Suite 200  
Tucson, Arizona 85701

Arizona Corporation Commission  
**DOCKETED**  
FEB 25 2010

DOCKETED BY MM

and

Michael W. Patten  
Roshka DeWulf & Patten, PLC  
One Arizona Center  
400 East Van Buren Street, Suite 800  
Phoenix, Arizona 85004

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27

1 Original and 13 copies of the foregoing  
2 filed this 25<sup>th</sup> day of February 2010 with:

3 Docket Control  
4 Arizona Corporation Commission  
5 1200 West Washington Street  
6 Phoenix, Arizona 85007

7 Copy of the foregoing hand-delivered/mailed  
8 this 25<sup>th</sup> day of February 2010 to:

9 Mr. Steve Olea  
10 Director, Utilities Division  
11 Arizona Corporation Commission  
12 1200 West Washington Street  
13 Phoenix, Arizona 85007

14 By: *Janice Payne*

15

16

17

18

19

20

21

22

23

24

25

26

27



**Uniform Credit Purchase Program**

**Renewable Energy Credit Purchase Program**

**Exhibit 5**

**UNS Electric, Inc.**

**Uniform Credit Purchase Program**

**Renewable Energy Credit Purchase Program**

**(“RECPP”)**

**Definition**

**2010 – 2014**

**FINAL**

## Table of Contents

Solar Electric: Residential Projects (<20kw) and Small Commercial Projects (<100 kW) .....	1-1
Solar Electric: Large Commercial Projects (>100kW).....	2-2
Residential and Small Commercial Solar Water Heating and Space Heating.....	3-1
Solar Water Heating and Space Heating: Large Commercial .....	4-1
Ground Source Heat Pumps: Residential and Commercial .....	5-1
Wind Systems Smaller Than 1 MW .....	6-1
Commercial Solar Daylighting .....	7-1
Additional Technologies with Prescriptive Incentives: .....	8-1
Technologies without Technology Specific Criteria .....	9-1
Non-Conforming Projects.....	10-1
Appendix 1: Incentive Summary Tables .....	11-1
Appendix 2: _Glossary of Terms.....	12-1

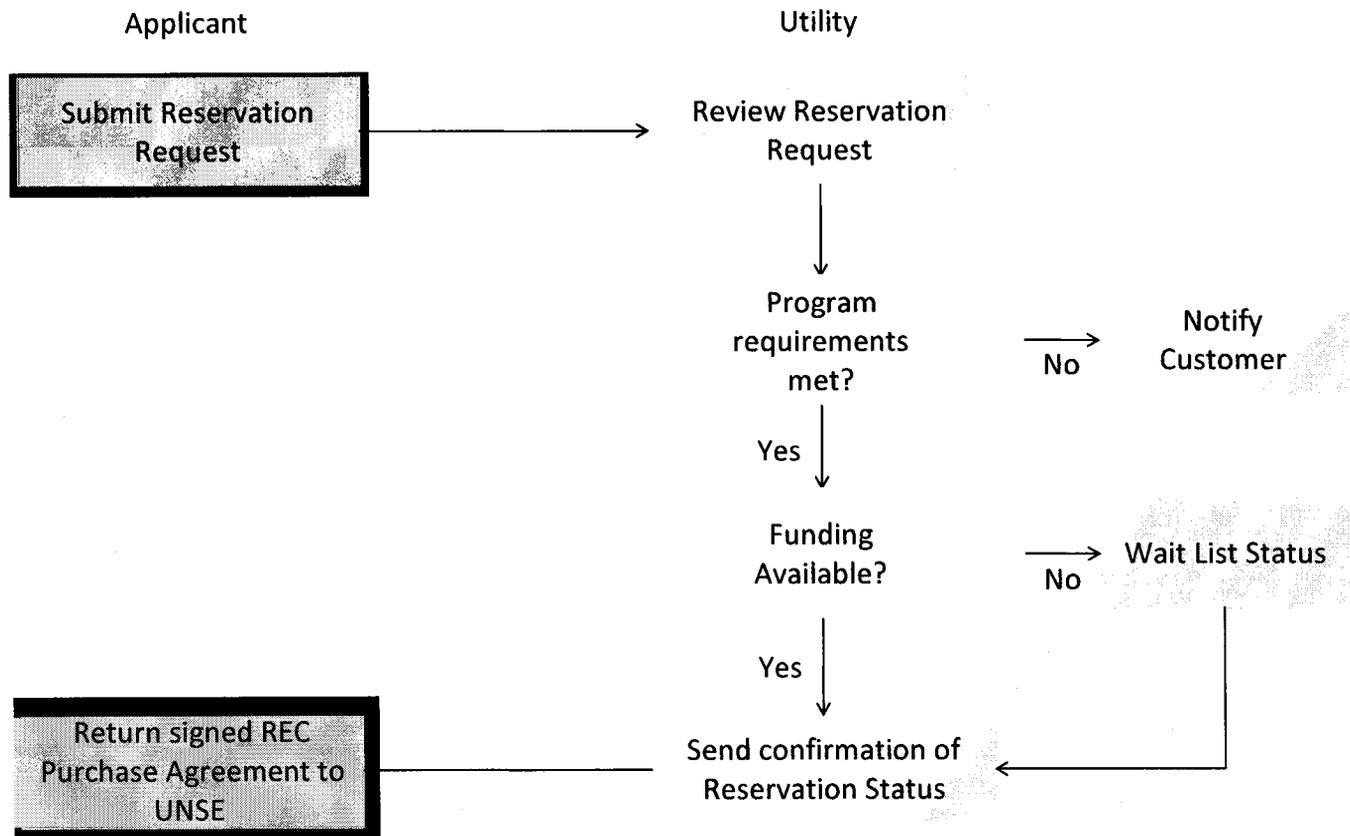
## Solar Electric: Residential Projects Smaller Than 20 kW and Commercial Projects Smaller Than 100 kW

UNS Electric, Inc. (“UNS Electric” or the “Company”) is committed to assisting our customers in developing their own renewable generation resources, through a balanced and supportive renewable energy distributed generation incentive program. Our goal is to create a program that will provide incentives for affordable, environmentally sensitive, customer-sited renewable energy generation systems to supplement UNS Electric customer’s energy needs. A properly designed system, matched to a customer’s energy use, will provide a reduction in utility bills through the use of renewable resources. This program reflects our commitment to reduce the cost of developing renewable energy resources.

### PROCESS FOR OBTAINING INCENTIVES

The process for obtaining incentives from UNS Electric involves the flow of information between the applicant and UNS Electric. The following sections reflect the typical three-step process.

#### Step 1 – Reservation Request and Assignment of Reservation Status



The applicant must first submit the reservation request to UNS Electric.<sup>1</sup> The reservation request includes information about the UNS Electric customer on whose property the system will be located, the Solar Electric system, the calculation of the incentive, and the installer of the system.

<sup>1</sup> Off-grid projects would submit a different version of the reservation request.

## Residential Projects and Commercial Projects Smaller Than 100 kW

UNS Electric will review the reservation request to ensure the application conforms to program requirements.

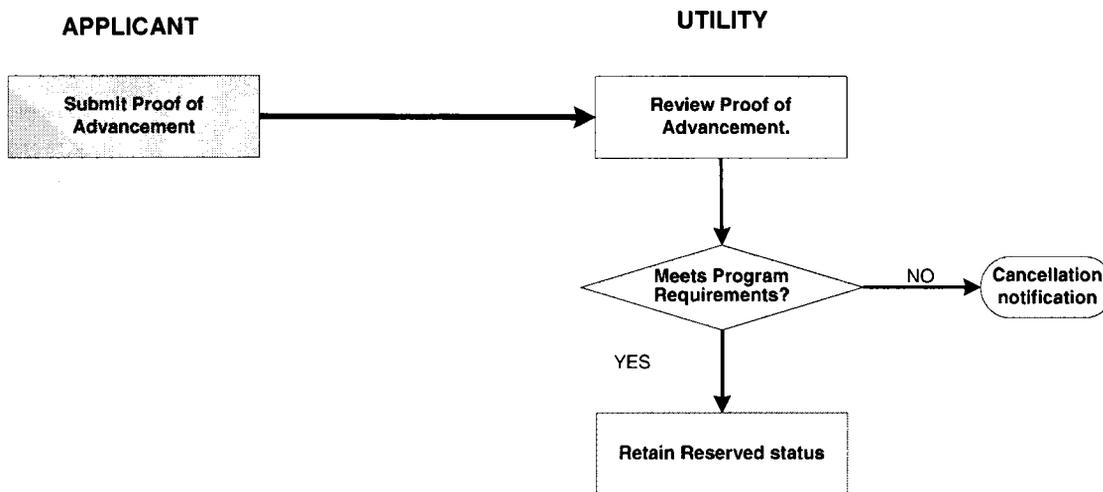
- Reservation requests for residential systems and commercial systems smaller than 100 kW are processed on a first-come, first-served basis.
- Reservation requests for residential systems and commercial systems smaller than 100 kW will be reviewed within 30 days of the utility's receipt of the request.

If the reservation request is approved, UNS Electric will send a confirmation to the applicant. A reservation request may be denied for two different reasons, each with its own consequences:

- The reservation request may be denied because the request is not in compliance with program requirements. In this case, UNS Electric will send notification to the applicant of the discrepancies and put the reservation in a "pending" status. The installer will have 14 days to provide the documentation required.
- The reservation request may be denied because it is not in conformance with program requirements. In this case, UNS Electric will send notice that the request is cancelled.
- The reservation request may be denied because funding is not available. In this case, UNS Electric will send a notification to the applicant that the request will be placed on a waiting list.

After reviewing the reservation request, UNS Electric will assign a reservation status.

### Step 2 – Proof of Advancement



Applicants for residential systems and commercial systems smaller than 100 kW must submit proof of project advancement to UNS Electric within 60 days of the date of reservation confirmation from UNS Electric to retain the reservation. Applicants for residential systems and commercial systems smaller than 100 kW must provide copies of city/county inspection permits to UNS Electric as documentation of the proof of project advancement. If those permits are not available within 60 days of the date of reservation confirmation, the applicant may also provide these documents in place of the permits:

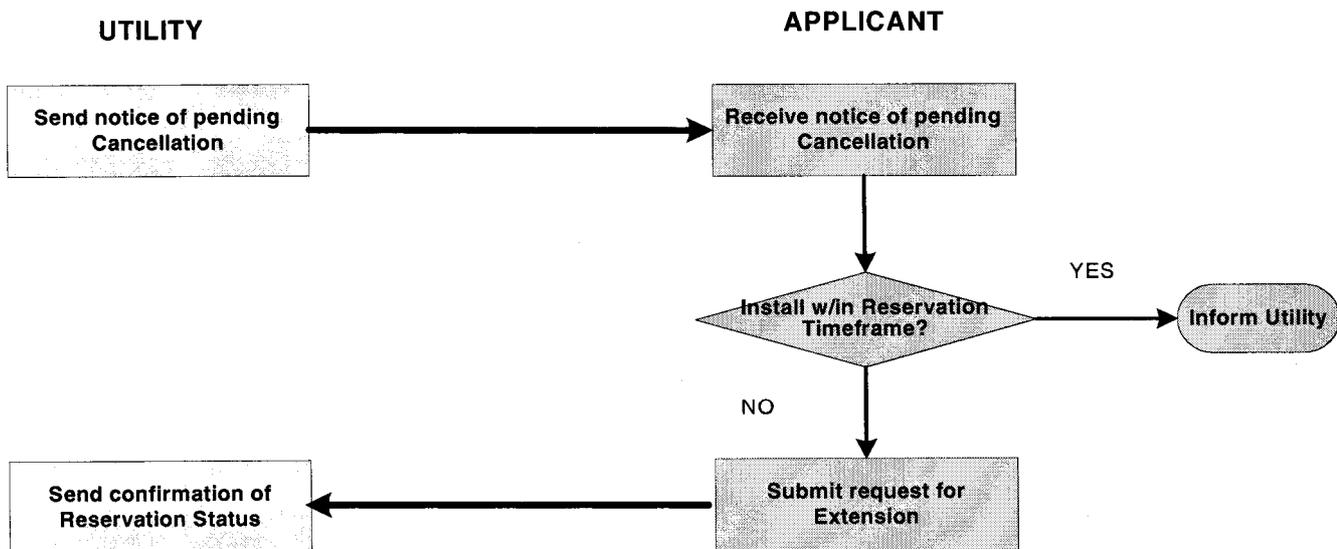
- Signed agreement

## Residential Projects and Commercial Projects Smaller Than 100 kW

- Assignment of Payment form
- Initial city/county permit application or actual receipt of final acceptance inspection paperwork from the city/county.

If proof of project advancement is not received within the specified timeframe, the applicant will be notified that the reservation is cancelled. The applicant has the option to reapply for funding after the reservation has been cancelled. The request will be processed in the same manner as a new project reservation and will be contingent upon availability of funding at the time the new application is received.

### Conditional Step – Extension / Cancellation

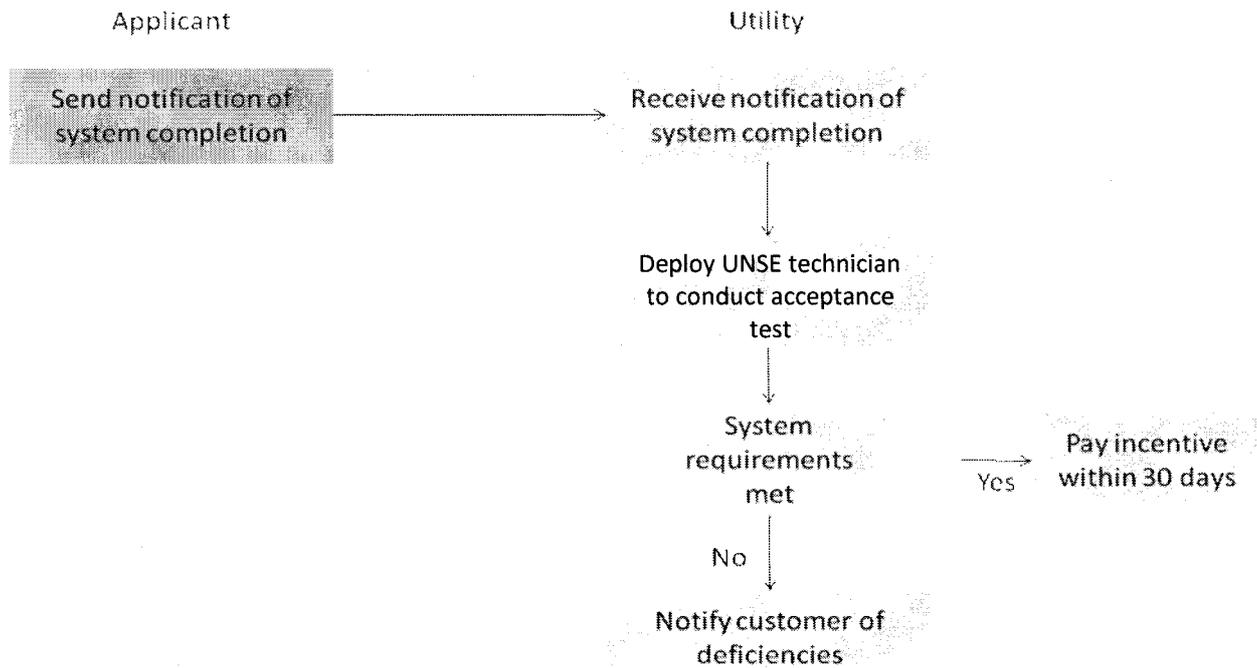


If all project requirements are not met within 180 days of the date of the reservation confirmation, the applicant must apply for an extension to remain eligible for the incentive. UNS Electric will trigger this request for extension with a notice of the pending cancellation 30 days prior to the date of scheduled cancellation. UNS Electric will grant an extension for up to 90 days following timely receipt of a customer's request for extension. UNS Electric may approve written extension requests detailing the conditions for delay for periods beyond 90 days under extenuating circumstances.

If all program requirements have not been met within the reservation timeframe, a reservation request will be cancelled unless an extension is granted.

## Residential Projects and Commercial Projects Smaller Than 100 kW

### Step 3 – Customer Requests Payment



Upon project completion, the customer must notify UNS Electric that the system has been placed in service. This should be done by submitting a copy of the city/county final inspection permit. When UNS Electric receives notification that the system is complete, UNS Electric will perform an “acceptance test.” The acceptance test requires that a UNS Electric inspector test the system’s compliance with the required specifications and its performance and determine that it is in line with UNS Electric requirements.

If the system meets UNS Electric specifications and performance requirements, UNS Electric will pay the customer the up-front incentive (“UFI”) within 30 days of the acceptance test. If the system fails to meet UNS Electric specifications and performance requirements, UNS Electric will notify the customer within 5 days of the acceptance test. The customer will then have 30 days to address the deficiencies and notify UNS Electric that the system is ready to be retested.

### **INCENTIVE LEVELS FOR RESIDENTIAL SOLAR ELECTRIC SYSTEMS AND COMMERCIAL SYSTEMS SMALLER THAN 100 kW**

Residential Solar Electric systems and non-residential Solar Electric systems smaller than 100 kW are eligible for UFIs. UFIs are those incentives where the customer receives a one-time payment based on the system’s designed capacity. Table 1 identifies the incentives available for residential Solar Electric systems and non-residential Solar Electric systems smaller than 100 kW.

Residential Projects and Commercial Projects Smaller Than 100 kW

**Table 1. Up-Front Incentives (\$/Watt) for On-Grid Residential Solar Electric Systems and On-Grid Non-Residential Solar Electric Systems Smaller Than 100 kWdc, and Off-Grid.**

Year	Residential	Small-Commercial	Off-Grid
2010	\$3.00/W DC	\$2.50	\$2.00
2011*	\$3.00/W DC	\$2.50	\$2.00
2012*	\$3.00/W DC	\$2.50	\$2.00
2013*	\$3.00/W DC	\$2.50	\$2.00
2014*	\$3.00/W DC	\$2.50	\$2.00

Notes:

\*Indicates that the incentive for that year has not yet been approved by the Arizona Corporation Commission (“ACC” or the “Commission”). As such, these incentives are tentative and may change pending ACC approval.

- On-Grid Residential customers will receive a UFI up to a cap of 20 kWac. If a residential system is installed larger than 20 kWac, UNS Electric will only provide an incentive payment for the first 20 kWac.
- On-Grid Small commercial customers will receive a UFI up to a cap of 100 kWac. If a small commercial system is installed larger than 100 kWac, it must apply under the large commercial program.
- Off-Grid customers, residential or commercial, will receive a UFI up to a cap of 4 kWac.
- The UFI may not exceed 60% of total System Cost.
- The customer must pay at least 15% of the project cost, after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)
- Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.
- As described later in this document, these incentive levels may be decreased because of sub-optimal system positioning.

The incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation approval, the incentive amount reserved will not be changed as long as the reservation is not cancelled.

In return for UNS Electric’s payment of a UFI, UNS Electric will be given complete and irrevocable ownership of the RECs until December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year after completion of installation of the system. Operational life during that time frame must be supported by system warranty or planned maintenance schedules.

## **PROJECT FUNDING**

Funds will be made available for reservations on a first-come, first-reserved basis, until annual funding is fully reserved. Reservations which are rejected as a result of insufficient funds will be placed on a waiting list and offered the opportunity to retain their original reservation date for one additional quarter without the need to resubmit application documentation. If the incentive level has changed from the date of the original reservation to the date when the reservation is approved, the new incentive level shall be applied.

## **NET METERING**

RECPP incentives can be applied to systems designed to serve only the typical load of the customer with whom the incentive agreement has been established. The assessment of that typical load does not preclude the periodic production of electricity in excess of the customer's demand. All projects must comply with ACC net metering rules.

## **PROJECT REQUIREMENTS AFTER INSTALLATION**

After completing the installation of a residential Solar Electric project or commercial Solar Electric project smaller than 100 kW, the customer must continue to provide information to UNS Electric about the system's performance.

All customer systems receiving renewable energy self-generation incentives are obligated to include a UNS Electric-supplied production meter, which will report system production to UNS Electric in accordance with the regular meter-reading schedule. UNS Electric, at its option, may perform periodic inspection of the system for operation, metered production, and reporting purposes.

## **THE FINE PRINT**

In addition to the other requirements described in this hand book, there are three other types of program details of which system owners and installers should be aware:

1. Installer qualifications
2. Customer-installed systems
3. System removal

These are described in further detail below.

### **Installer Qualifications**

All systems receiving incentives under the RECPP must be installed by a qualified installer. The following requirements must be submitted by the applicant as part of the reservation request. UNS Electric will verify that the installer meets the following minimum qualifications prior to confirming a reservation request:

## Residential Projects and Commercial Projects Smaller Than 100 kW

1. The installer must possess a valid license on file with the Arizona Registrar of Contractors (“AZROC”) with a license classification appropriate for the technology being installed. Alternatively, the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. A copy of the AZROC license must be provided as part of the reservation request.
2. The installer must possess an Arizona business license that is active and in good standing.

Installers may request that the above information be retained on file with UNS Electric; however, under this option the installer must certify that the information on file remains current with the submission of each reservation request. Information on file must be renewed yearly.

### **Installations by Customer (Residential Photovoltaic and Wind Only)**

Residential customers may self-install Solar Electric systems 10 kWac or smaller providing they adhere to all applicable codes and standards. The customer-installed systems are eligible for an incentive equal to 70% of the standard UFI, as otherwise listed in Table 1, above. UNS Electric reserves the right to withdraw this self-install qualification condition at any time in the future if UNS Electric finds self-installations are not adhering to the applicable codes and standards or are found to be of poor quality workmanship.

### **System Removal**

If receiving a UFI, neither the Qualifying System nor any components thereof shall be removed from the premises (by either the applicant or future owners or occupants of the property) until December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year following completion of system installation of the renewable energy system, without express agreement of UNS Electric. If the Qualifying System is removed by any party in violation of this provision, customer shall immediately reimburse UNS Electric all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that an additional incentive is not provided for any new distributed renewable energy resource system on that site until the Renewable Energy Credit (“REC”) contracted operational life of the original system has been completed.

### **ADDITIONAL RESOURCES**

The following resources provide information regarding system installation and performance forecasting:

The California Energy Commission’s Guide to Buying a Photovoltaic Solar Electric System at [http://energy.ca.gov/reports/2003-03-11\\_500-03-014F.PDF](http://energy.ca.gov/reports/2003-03-11_500-03-014F.PDF)

The Arizona Consumers Guide to Buying a Solar Electric System at [www.azsolarcenter.com/design/azguide-1.pdf](http://www.azsolarcenter.com/design/azguide-1.pdf)

**ATTACHMENT A**  
**System Qualifications for Residential Solar Electric Projects and**  
**Commercial Solar Electric Projects Smaller Than 100 kWac**

All solar electric generating Customer Systems must meet the following system and installation requirements to qualify for UNS Electric's ("UNS Electric" or the "Company") Renewable Energy Credit Purchase Program ("RECPP"). Capitalized terms not defined herein shall have the meanings ascribed to them in the RECPP Agreement.

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement which is in conflict with a site-specific governmental requirement shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

**Equipment Standards**

1. The Customer System components must be certified as meeting the requirements of IEEE-929 - Recommended Practice for Utility Interface of Photovoltaic Systems.<sup>2</sup>
2. The Customer System components must be certified as meeting the requirements of UL-1741 - Power Conditioning Units for use in Residential Photovoltaic Power and be covered by a non-prorated manufacturer's warranty of at least two years.
3. Photovoltaic components must be certified by a nationally recognized testing laboratory as meeting the requirements of UL-1703 - Standard for Flat Plate Photovoltaic Modules and Panels Systems and be covered by a non-prorated manufacturer's warranty of at least 20 years.
4. The inverter must be certified as meeting the requirements of IEEE-1547 - Recommended Practice for Utility Interface of Photovoltaic Systems and it must be UL-1741 certified. Inverters must be covered by a manufacturer's warranty of at least ten years.

---

<sup>2</sup> Some technology-specific criteria reference third party standards. The requirements of those standards are fully applicable when referenced as part of technology specific criteria. UNSE recognizes that new standards are likely to develop in the near future for technologies included in the RECPP and recommends that the new standards are examined for application in this program definition as they become available.

## Residential Projects and Commercial Projects Smaller Than 100 kW

5. The Customer System design and installation must meet all requirements of the latest edition of the National Electrical Code, including Article 690 and all grounding, conductor, raceway, over-current protection, disconnect and labeling requirements.
6. All other electrical components must be UL listed.
7. The Customer System and installation must meet the requirements of all federal, state and local building codes and have been successfully inspected by the building official having jurisdiction. Accordingly, the installation must be completed in accordance with the requirements of the latest edition of National Electrical Code in effect in the jurisdiction where the installation is being completed (NEC), including, without limitation, Sections 200-6, 210-6, 230-70, 240-3, 250-26, 250-50, 250-122, all of Article 690 pertaining to Solar Photovoltaic Systems, thereof, all as amended and superseded.
8. The Customer System must meet Company and Arizona Corporation Commission interconnection requirements for self-generation equipment.  
See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.

### Installation requirements

1. A grid-connected Residential Customer System must have a total solar array nameplate rating of at least 1,200 watts DC and no more than 20,000 watts AC.
2. The Customer System installation must meet the UNS Electric Service Requirements 2000 Edition, Page 1.20, as follows:  

“AN AC DISCONNECT MEANS SHALL BE PROVIDED ON ALL UNGROUNDED AC CONDUCTORS and SHALL CONSIST OF A LOCKABLE GANG OPERATED DISCONNECT CLEARLY INDICATING OPEN OR CLOSED. THE SWITCH SHALL BE VISUALLY INSPECTED TO DETERMINE THAT THE SWITCH IS OPEN. THE SWITCH SHALL BE CLEARLY LABELED STATING “DG SERVICE DISCONNECT.”
3. The utility meter and utility disconnect will be installed in a location readily accessible by UNS Electric during normal business hours.
4. Products must be installed according to manufacturers' recommendations.
5. The Customer System photovoltaic panels and modules must face within +/- 100 degrees of true south, and be substantially unshaded from 9 am to 3 pm. System arrays which are facing at an azimuth angle of more than 20 degrees from true south or shaded for more than one hour per day will be subject to a reduced amount of buydown payment per Attachment B.
6. The Customer System photovoltaic panels and modules must be fitted at an angle of 0 degrees to 60 degrees from horizontal. System arrays which are fitted with an elevation angle of less than 20 degrees or more than 35 degrees above horizontal will be subject to a reduced amount of buydown payment per Attachment B.

## Residential Projects and Commercial Projects Smaller Than 100 kW

7. For Residential Customer Systems, Company will provide a meter and meter socket that will be installed in a readily accessible outdoor location by the Customer between the DC to AC inverter and the connection to the over-current device in the Customer's electric service panel. For Non-Residential Customer Systems, Company shall provide the meter only, to be installed in a Customer supplied meter socket to be installed in a readily accessible outdoor location by the Customer between the DC to AC inverter and the connection to the over-current device in the Customer's electric service panel. Installer must notify UNS Electric of wiring configuration so that UNS Electric may provide appropriate 3-phase meter.
8. Total voltage drop on the DC and AC wiring from the furthest PV module to the AC meter will not exceed 2%.
9. PV panels and DC to AC inverter will be installed with sufficient clearance to allow for proper ventilation and cooling. At a minimum, manufacturer clearance recommendations will be observed. PV modules may be mounted less than 4 inches above any surface and an additional inch of clearance for each foot of continuous array surface area beyond four feet in the direction parallel to the mounting support surface only in cases when arrays are flush-mounted to roof pitch. Otherwise, the four-inch spacing and an additional inch of clearance for each foot of continuous array surface area minimum is required.
10. Storage Batteries are not allowed as part of the Customer System unless the inverter is a separate component and UNS Electric can locate the Solar Meter at the inverter's output. If configured otherwise, battery losses will adversely reflect in the annual AC metered energy output. Customer's solar energy generation and energy storage system must meet the requirements of 2 and 3 of this Attachment A.
11. The DC to AC inverter used must provide maximum power point tracking for the full voltage and current range expected from the photovoltaic panels used and the temperature and solar insolation conditions expected at the installation location located within UNS electric service territory.
12. The DC to AC inverter must be capable of adjusting to "sun splash" from all possible combinations of cloud fringe effects without interruption of electric production.
13. UNS Electric reserves the right to modify standards as technology changes on a case by case basis, pending independent laboratory analysis, Professional Engineer ("PE") stamp, or UNS Electric engineering analysis.

### **General Requirements**

1. All Customer System installations must be completed in a professional, workmanlike and safe manner.
2. Installation must have been made after January 1, 1997.

## Residential Projects and Commercial Projects Smaller Than 100 kW

3. The Customer must be connected to the Company's electric grid, except for approved off-grid systems in conformance with the RECPP.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. The project must comply with applicable local, state, and federal regulations.
6. Products must be installed according to manufacturers' recommendations.
7. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
8. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
9. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems will require customer supplied metering for Performance Based Incentive ("PBI") payment calculation purposes.
10. PV system components shall be properly labeled, including AC & DC disconnects (if present), solar generation meter, service panel (outside cover), and breakers inside the service panel.
11. The system will in all cases have a material and full labor warranty of at least five years.

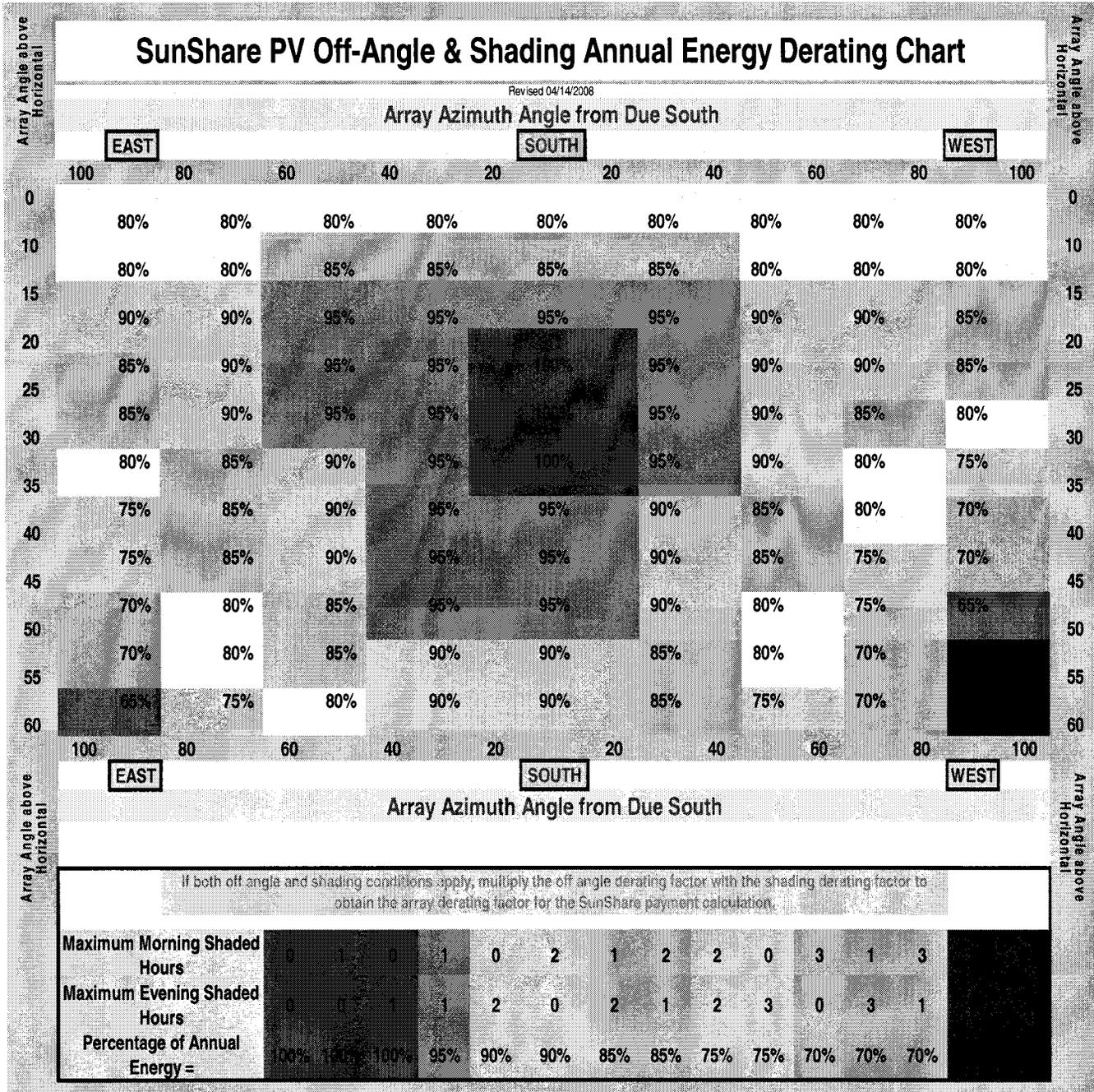
### **Additional Requirements for Off-Grid Systems**

1. The minimum PV array size shall be no less than 600 Wdc. The maximum PV array size for customers currently paying into the REST tariff shall not exceed 4,000 Wac. For customers not currently paying into the REST tariff, systems shall not exceed 2,000 Wac.
2. Off-grid systems will not be metered. Compliance reporting production will be based on an annual 20% capacity factor using nameplate DC rating for capacity.

Non-Residential Projects Larger Than 100 kW

ATTACHMENT B

SunShare Solar Electric Off-Angle & Shading Annual Energy Derating Chart



Qualifying systems using Building Integrated Photovoltaic (BIPV) modules of total array capacity of 5 kWdc or less shall receive 90% of the UFI incentive value for PV systems listed in Attachment A. Systems using BIPV modules of total array capacity of greater than 5 kWdc shall be derated based on heating unless the applicant can demonstrate optimal performance.

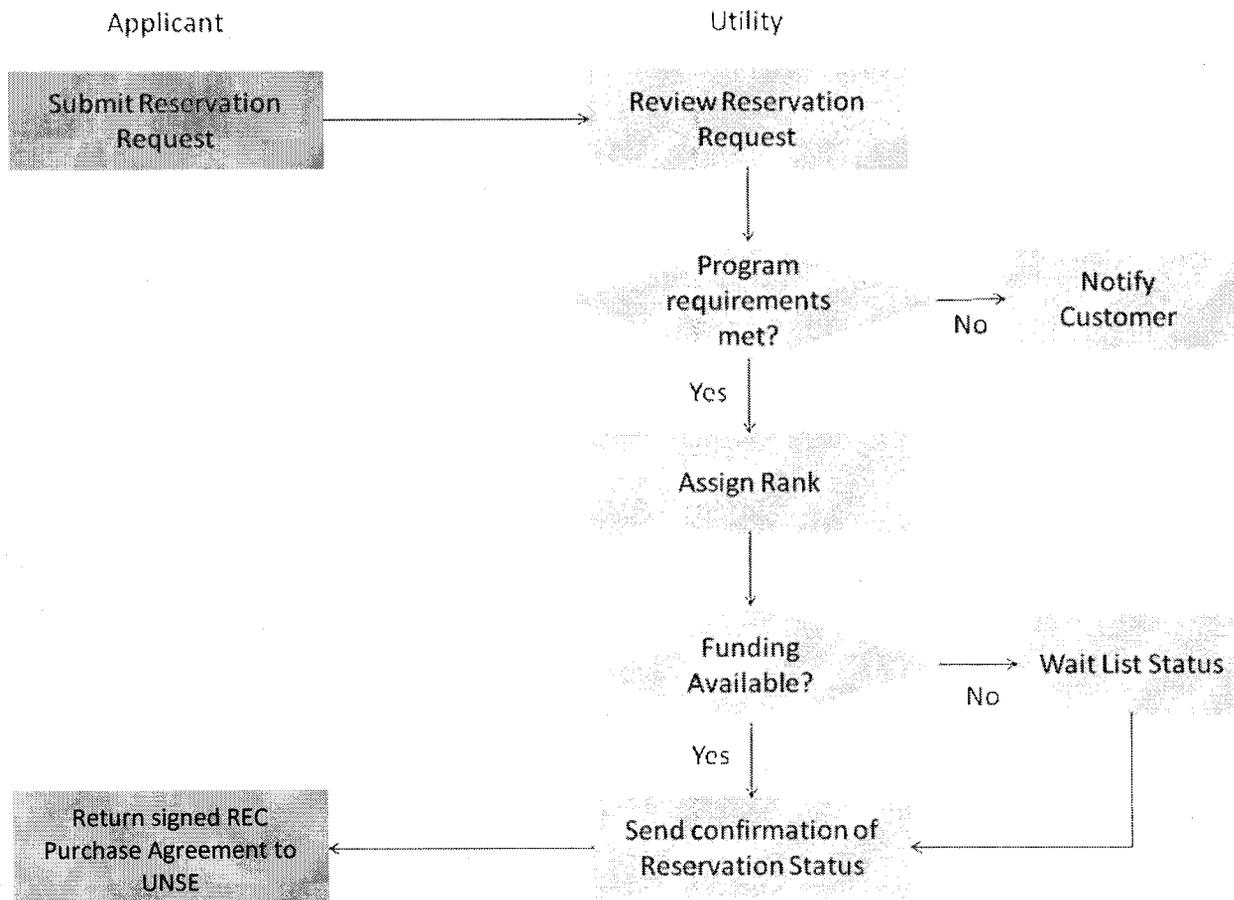
## Solar Electric: Non-Residential Solar Electric Projects Larger Than 100 kW

UNS Electric (“UNS Electric” or the “Company”) is committed to assisting our customers in developing their own renewable generation resources, through a balanced and supportive renewable energy distributed generation incentive program. Our goal is to create a program that will provide incentives for affordable, environmentally sensitive, customer-sited renewable energy generation systems to supplement UNS Electric customer’s energy needs. A properly designed system, matched to a customer’s energy use, will provide a reduction in utility bills through the use of renewable resources. This program reflects our commitment to reduce the cost of developing renewable energy resources.

### PROCESS FOR OBTAINING INCENTIVES

The process for obtaining incentives from UNS Electric involves the flow of information between the applicant and UNS Electric. The following sections reflect the typical five-step process.

#### Step 1 – Reservation Request and Assignment of Reservation Status



## Non-Residential Projects Larger Than 100 kW

The applicant must first submit the reservation request to UNS Electric.<sup>3</sup> The reservation request includes information about the UNS Electric customer on whose property the system will be located, the Solar Electric system, the calculation of the incentive, and the installer of the system.

UNS Electric will review the reservation request within 90 days of receipt of the request to ensure the application conforms to program requirements.

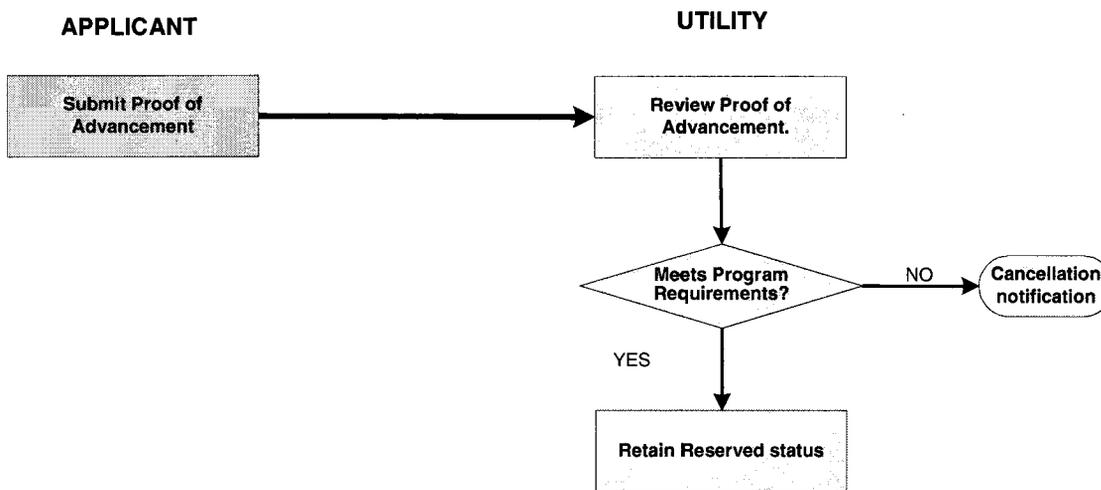
- Reservation requests for non-residential systems larger than 100 kW are assigned a rank based on the lowest expected life cycle credit purchase cost and likelihood of construction.
- In the event of a tie in the ranking, when the program would be fully subscribed if both projects were given reservation status, funds will be awarded based on the date of receipt of the completed reservation request.

If the reservation request is approved, UNS Electric will send a confirmation to the applicant. A reservation request may be denied for two different reasons, each with its own consequences:

- The reservation request may be denied because it is not in conformance with program requirements. In this case, UNS Electric will send notice that the request is cancelled.
- The reservation request may be denied because funding is not available. In this case, UNS Electric will send a notification to the applicant that the request will be placed on a waiting list.

After reviewing the reservation request, UNS Electric will assign a reservation status.

### Step 2 – Proof of Advancement



Applicants for non-residential systems larger than 100 kW must submit proof of project advancement to UNS Electric within 120 days of the date of reservation confirmation from UNS Electric to retain the reservation. The Proof of Project Advancement documentation for a non-residential project larger than 100 kW may include the following:

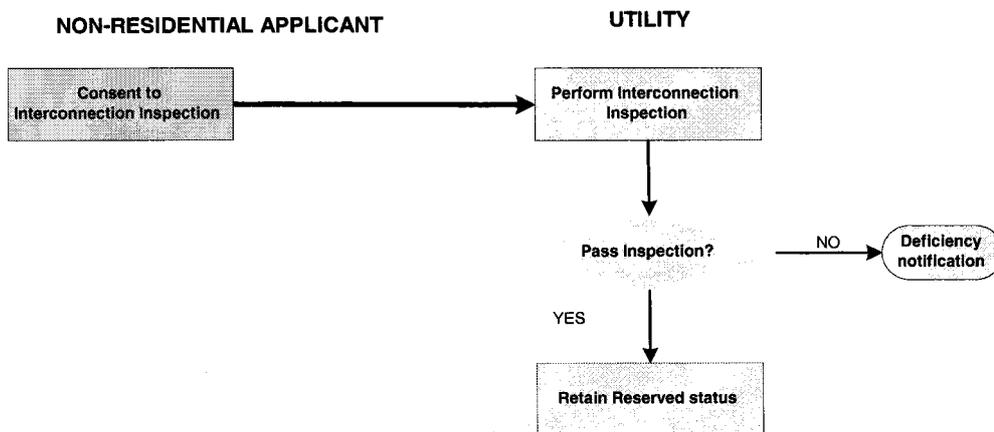
<sup>3</sup> Applicants with off-grid projects would submit a different version of the reservation request.

## Non-Residential Projects Larger Than 100 kW

- A project agreement (between customer and installer);
- An executed installation agreement including all project participants;
- Building and/or construction permits and/or a full set of design development or construction drawings (80% or more complete);
- An executed interconnection agreement (if applicable); and
- A letter from customer committing to utility-accepted in-service date.

If proof of project advancement is not received within the specified timeframe, the customer will be notified that the reservation is cancelled. An appropriate written request for an extension may be requested if circumstances require. The applicant has the option to reapply for funding after the reservation has been cancelled. The request will be processed in the same manner as a new project reservation and will be contingent upon availability of funding at the time the new application is received.

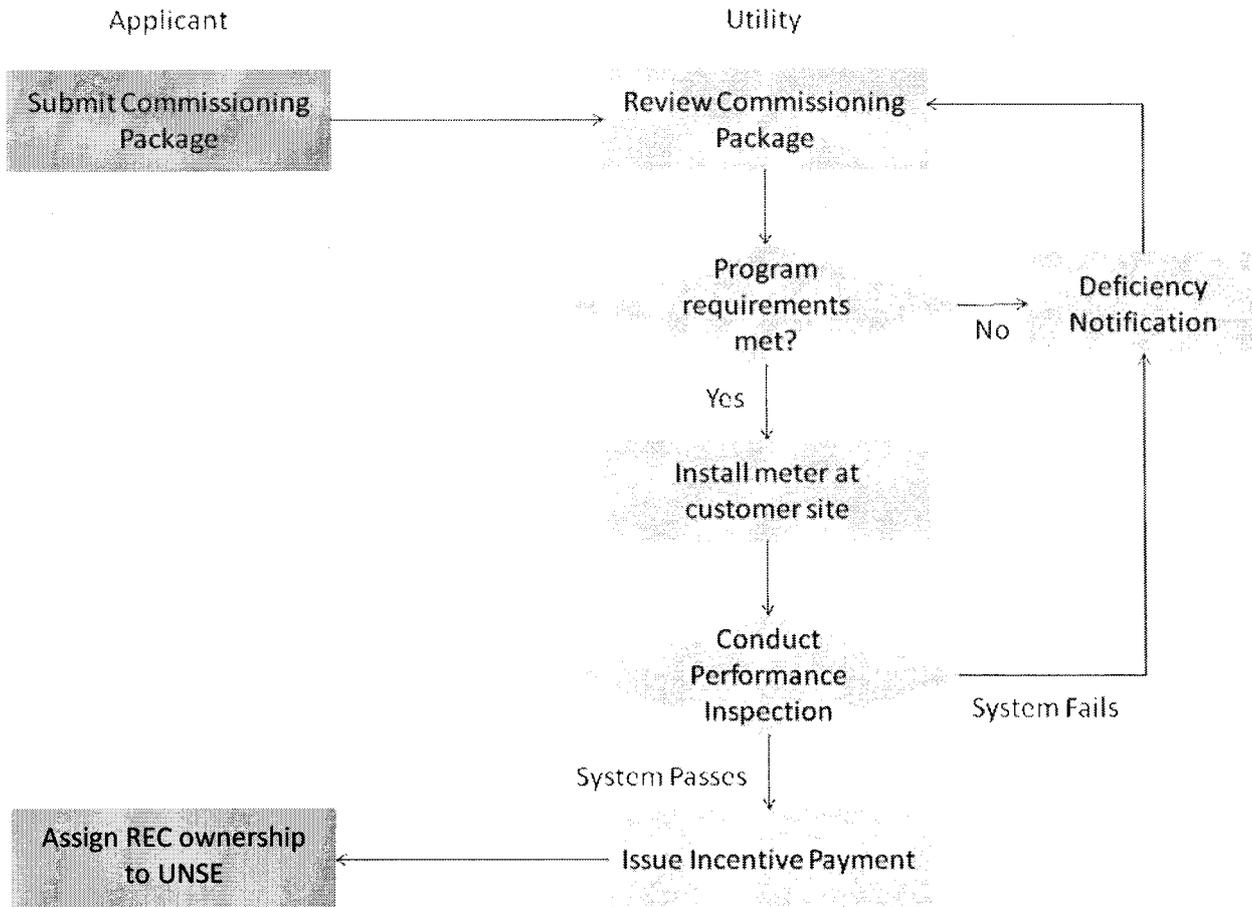
### Step 3 – Interconnection Inspection (for Grid-Tied Qualifying Systems with capacity larger than 100 kW)



Non-residential grid-tied qualifying systems of electrical generating capacity larger than 100 kW must submit to and pass an interconnection inspection before the system can be commissioned. UNS Electric conducts the interconnection inspection and will notify the applicant of the results of the inspection. If the system passes the interconnection inspection, the application retains the reservation. The applicant can keep the reservation even if the system fails the initial interconnection inspection, as long as the deficiency is remedied within 120 days from the date of the reservation confirmation, as described in Step 2.

## Non-Residential Projects Larger Than 100 kW

### Step 4 – System Commissioning For Non-Residential Systems Larger Than 100 kW



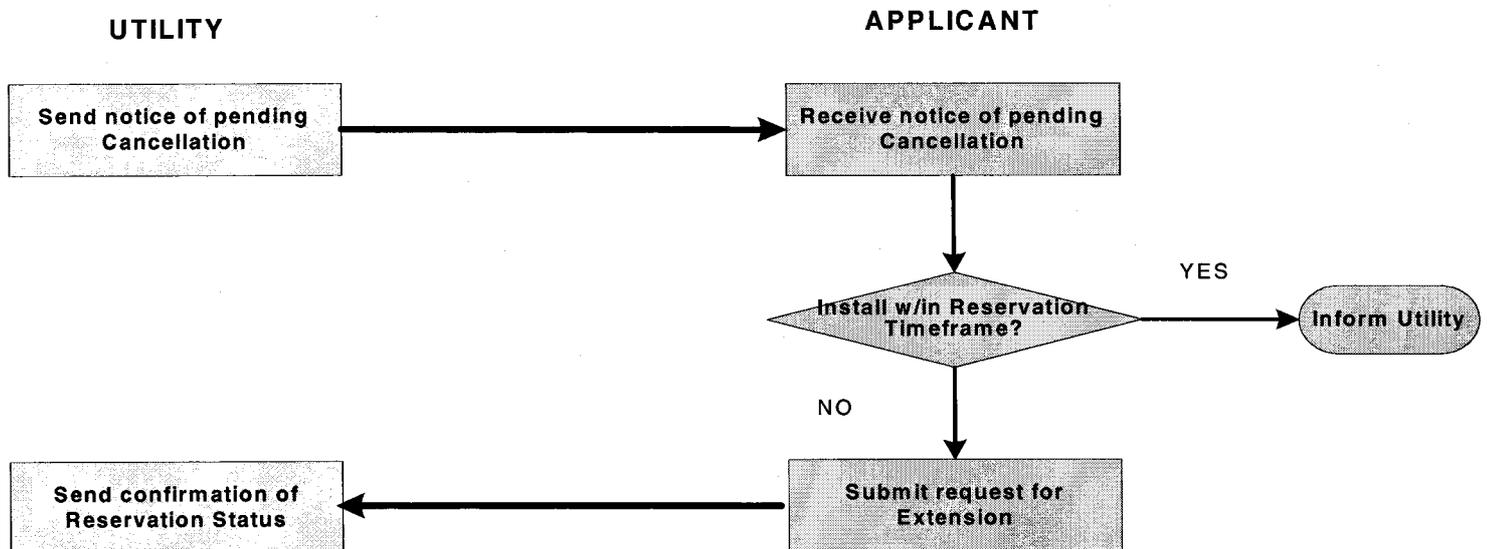
After the Non-Residential system larger than 100 kW has been commissioned, the applicant must submit a commissioning package to UNS Electric. UNS Electric will review the commissioning package and confirm that all program requirements have been met, including passing the interconnection inspection.

After receiving the commissioning package, UNS Electric will dispatch a UNS Electric representative to install the meter at the system site. The meter will be certified according to the UNS Electric standards. The customer must provide access to the site during normal business hours so that the UNS Electric representative can install the meter.

In addition, UNS Electric may, at its discretion, perform a conformance inspection of the system. UNS Electric will notify the applicant of the scheduled conformance inspection and the applicant must make the system available for inspection. In most cases in which a conformance inspection is conducted, an incentive payment may not be issued until after a qualifying system has passed the conformance inspection.

## Non-Residential Projects Larger Than 100 kW

### Conditional Step – Extension / Cancellation



If all project requirements are not met within 365 days of the date of the reservation confirmation, the applicant must apply for an extension to remain eligible for the incentive. UNS Electric will trigger this request for extension with a notice of the pending cancellation 60 days prior to the date of scheduled cancellation. UNS Electric will grant an extension for up to 90 days following timely receipt of a customer's request for extension. UNS Electric may approve written extension requests detailing the conditions for delay for periods beyond 90 days under extenuating circumstances, or for systems larger than 1 MW.

If all program requirements have not been met within the reservation timeframe, a reservation request will be cancelled unless an extension is granted.

## Non-Residential Projects Larger Than 100 kW

### **Step 5 – Incentive Payment is Disbursed**

Non-residential Solar Electric systems larger than 100 kW are eligible for a performance-based incentive (PBI). All PBI Project Agreements will include the following terms:

1. A project agreement between the applicant(s) and UNS Electric that details the assignment of energy and RECs and the assignment of payment must be completed before payments can be disbursed.
2. At a minimum, quarterly meter reads will be performed by UNS Electric and quarterly payments will be made to the assigned payee within 30 days of the meter reading based on quarterly kWh production. If the payment due is less than \$25.00, it will be held for the next payment period.
3. PBI payments will begin with the first quarterly production following receipt of the completed system commissioning package and conformance inspection, if required, and continue for the life of the agreement term. As part of this provision, it is understood that systems commissioned mid-quarter will receive payment only for the production of that partial quarter.

UNS Electric's payment of a PBI will assure UNS Electric complete and irrevocable ownership of the REC for the full duration of the PBI agreement. The agreement duration must fully coincide with the PBI payment schedule and the system must be supported by system warranty or planned maintenance schedules for the term of the agreement.

### **INCENTIVE LEVELS FOR NON-RESIDENTIAL SOLAR ELECTRIC SYSTEMS LARGER THAN 100 kW**

Non-residential Solar Electric systems larger than 100 kW are eligible for performance-based incentives ("PBIs"). The PBI allows the customer to collect incentive payments in direct relation to the actual system production. Table 2 identifies the incentives available for non-residential Solar Electric systems larger than 100 kW.

In all cases, incentive values listed in Table 2 are maximum values. PBIs are awarded through a bid process, which is discussed later in this section. Applicants are encouraged to submit bids requesting incentive amounts less than the maximums listed. Bids requesting a lower level of incentive payment than the maximum will have an increased chance of acceptance in the allocation ranking process.

## Non-Residential Projects Larger Than 100 kW

**Table 2. Maximum Performance-Based Incentives for Non-Residential Projects Larger Than 100 kW**

Year	Maximum Incentive Levels for Specified REC Agreements of Specified Duration		
	10-year	15-year	20-year
2010	0.182	0.168	0.162
2011*	0.182	0.168	0.162
2012*	0.182	0.168	0.162
2013*	0.182	0.168	0.162
2014*	0.182	0.168	0.162

**Notes:**

\*Indicates that the incentive for that year has not yet been approved by the Arizona Corporation Commission (“ACC” or the “Commission”). As such, these incentives are tentative and may change pending ACC approval.

- There is no incentive cap for non-residential systems other than annual program funding considerations.
- A PBI cannot exceed 60% of the real project costs, defined as the undiscounted total system cost plus acceptable financing charges. Acceptable finance charges are finance charges used for the PBI incentive cap calculation and cannot exceed the current prime interest rate plus 5%. Financing charges must be disclosed as part of the commissioning package, if not disclosed before.
- The customer must pay at least 15% of the project cost (as defined above), after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)
- Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.

The incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation approval, the incentive amount reserved will not be changed as long as the reservation is not cancelled.

UNS Electric’s payment of a PBI will assure UNS Electric complete and irrevocable ownership of the REC for the full duration of the PBI agreement. The agreement duration must fully coincide with the PBI payment schedule and the system must be supported by system warranty or planned maintenance schedules for the term of the agreement.

### **PROJECT FUNDING**

Non-residential funds will be committed as bids are accepted; funds will not be placed in reserve for later in the year. As a result, the budget may be committed before the end of the year. Funds will be made available to projects based on a ranking generated by lowest expected life cycle credit purchase cost as provided in the application and verified by UNS Electric, as well as likelihood of construction. Projects submitted to the utility for reservation will be ranked based on a calculated index value for purposes of allocating non-residential funds as proposed in the application and verified by UNS Electric. Lowest lifecycle cost projects will be funded first. Indexing of the non-residential projects will be performed based on the verified incentive values and duration of the proposed agreement in the application for that project. In addition, the bid evaluator assesses the likelihood that the project will be completed. Projects with higher incentive payments result in a higher expected life cycle credit purchase cost and projects that produce more kWh result in a lower expected life cycle credit purchase cost. In

## Non-Residential Projects Larger Than 100 kW

the event of a tie in the ranking, when the program would be fully subscribed if both projects were given reservation status, funds will be awarded based on the date of receipt of the completed reservation request.

Reservation requests will reviewed by the utility on a monthly basis. Once reservation requests are fully ranked each month, notification of reservation approvals and rejections will be made in conformance with the rankings and available funding.

Reservations which are rejected as a result of insufficient program funds may elect to carry forward into the next period and retain the original reservation date. The election must be made at the time of the original application.

### **NET METERING**

RECPP incentives can be applied to systems designed to serve only the typical load of the customer with whom the incentive agreement has been established. The assessment of that typical load does not preclude the periodic production of electricity in excess of the customer's demand. All projects must comply with ACC net metering rules.

### **PROJECT REQUIREMENTS AFTER INSTALLATION**

All customer systems receiving renewable energy self-generation incentives are obligated to include a UNS Electric-supplied production meter, which will report system production to UNS Electric in accordance with the regular meter-reading schedule. UNS Electric, at its option, may perform periodic inspection of the system for operation, metered production, and reporting purposes.

## **THE FINE PRINT**

In addition to the other requirements described in this hand book, there are two other types of program details of which system owners and installers should be aware:

1. Installer qualifications
2. System removal

These are described in further detail below.

### **Installer Qualifications**

All systems receiving incentives under the RECPP must be installed by a qualified installer. The following requirements must be submitted by the applicant as part of the reservation request. UNS Electric will verify that the installer meets the following minimum qualifications prior to confirming a reservation request:

1. The installer must possess a valid license on file with the Arizona Registrar of Contractors ("AZROC") with a license classification appropriate for the technology being installed. Alternatively, the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. A copy of the AZROC license must be provided as part of the reservation request.
2. The installer must possess an Arizona business license that is active and in good standing.

Installers may request that the above information be retained on file with UNS Electric; however, under this option the installer must certify that the information on file remains current with the submission of each reservation request. Information on file must be renewed yearly.

### **System Removal**

If receiving a PBI, the Qualifying System or any components thereof shall not be removed from the premises until the last day of the final month of the final full calendar year of the applicable incentive payment term in the Agreement following completion of system installation of the renewable energy system, without express agreement from UNS Electric. If the Qualifying System is removed in violation of this provision, customer shall immediately reimburse UNS Electric all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that an additional incentive is not provided for any new distributed renewable energy resource system on that site until the REC contracted operational life of the original system has been completed.

UNS Electric shall attempt to monitor the number of missing or non-working distributed generation systems and shall summarize its observations in its annual Compliance Report.

**ATTACHMENT A**

**Qualifications for Non-Residential Solar Electric Systems Larger Than 100 kWac**

All solar electric generating Customer Systems must meet the following system and installation requirements at the time of project commissioning to qualify for UNS Electric's ("UNS Electric" or the "Company") Renewable Energy Credit Purchase Program ("RECPP"). Capitalized terms not defined herein shall have the meanings ascribed to them in the RECPP Agreement.

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement which is in conflict with a site-specific governmental requirement shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

**Equipment Standards**

1. The Customer System components must be certified as meeting the requirements of IEEE-929 - Recommended Practice for Utility Interface of Photovoltaic Systems.<sup>4</sup>
2. The Customer System components must be certified as meeting the requirements of UL-1741 - Power Conditioning Units for use in Residential Photovoltaic Power and be covered by a non-prorated manufacturer's warranty of at least two years.
3. Photovoltaic components must be certified by a nationally-recognized testing laboratory as meeting the requirements of UL-1703 - Standard for Flat Plate Photovoltaic Modules and Panels Systems; they must also be covered by a non-prorated manufacturer's warranty of at least 20 years.
4. The Customer System design and installation must meet all requirements of the latest edition of the National Electrical Code, including Article 690 and all grounding, conductor, raceway, over-current protection, disconnect and labeling requirements.

---

<sup>4</sup> Some technology-specific criteria reference third party standards. The requirements of those standards are fully applicable when referenced as part of technology specific criteria. UNSE recognizes that new standards are likely to develop in the near future for technologies included in the RECPP and recommends that the new standards are examined for application in this program definition as they become available.

## Non-Residential Projects Larger Than 100 kW

5. The inverter must be certified as meeting the requirements of IEEE-1547 - Recommended Practice for Utility Interface of Photovoltaic Systems and it must be UL-1741 certified. Inverters must be covered by a manufacturer's warranty of at least ten years.
6. All other electrical components must be UL listed.
7. The Customer System and installation must meet the requirements of all federal, state and local building codes and have been successfully inspected by the building official having jurisdiction. Accordingly, the installation must be completed in accordance with the requirements of the latest edition of National Electrical Code in effect in the jurisdiction where the installation is being completed (NEC), including, without limitation, Sections 200-6, 210-6, 230-70, 240-3, 250-26, 250-50, 250-122, all of Article 690 pertaining to Solar Photovoltaic Systems, thereof, all as amended and superseded.
8. The Customer System must meet Company and Arizona Corporation Commission interconnection requirements for self-generation equipment.  
See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.

### Installation requirements

1. Any Non-Residential Customer System must have a total solar array nameplate rating of more than 1,200 watts DC.
2. The Customer System installation must meet the UNS Electric Service Requirements 2000 Edition, Page 1.20, as follows:  

“AN AC DISCONNECT MEANS SHALL BE PROVIDED ON ALL UNGROUNDED AC CONDUCTORS and SHALL CONSIST OF A LOCKABLE GANG OPERATED DISCONNECT CLEARLY INDICATING OPEN OR CLOSED. THE SWITCH SHALL BE VISUALLY INSPECTED TO DETERMINE THAT THE SWITCH IS OPEN. THE SWITCH SHALL BE CLEARLY LABELED STATING “DG SERVICE DISCONNECT.”
3. The utility meter and utility disconnect will be installed in a location readily accessible by UNS Electric during normal business hours.
4. Products must be installed according to manufacturers' recommendations.
5. For Non-Residential Customer Systems, Company shall provide the meter only, to be installed in a Customer supplied meter socket to be installed in a readily accessible outdoor location by the Customer between the DC to AC inverter and the connection to the over-current device in the Customer's electric service panel.
6. Total voltage drop on the DC and AC wiring from the furthest PV module to the AC meter will not exceed 2%.

## Non-Residential Projects Larger Than 100 kW

7. PV panels and DC to AC inverter will be installed with sufficient clearance to allow for proper ventilation and cooling. At a minimum, manufacturer clearance recommendations will be observed. PV modules may be mounted less than 4 inches above any surface and an additional inch of clearance for each foot of continuous array surface area beyond four feet in the direction parallel to the mounting support surface only in cases when arrays are flush-mounted to roof pitch. Otherwise, the four-inch spacing and an additional inch of clearance for each foot of continuous array surface area minimum is required.
8. Storage Batteries are not allowed as part of the Customer System unless the inverter is a separate component and UNS Electric can locate the Solar Meter at the inverter's output. If configured otherwise, battery losses will adversely reflect in the annual AC metered energy output. Customer's solar energy generation and energy storage system must meet the requirements of 1 and 2 under "Equipment Standards" of this Attachment A.
9. The DC to AC inverter used must provide maximum power point tracking for the full voltage and current range expected from the photovoltaic panels used and the temperature and solar insolation conditions expected at the installation location, located within UNS Electric service territory.
10. The DC to AC inverter must be capable of adjusting to "sun splash" from all possible combinations of cloud fringe effects without interruption of electric production.

### **General Requirements**

1. All Customer System installations must be completed in a professional, workmanlike and safe manner.
2. Installation must have been made after January 1, 1997.
3. The Customer must be connected to the Company's electric grid, except for approved off-grid systems in conformance with the RECPP.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. The project must comply with applicable local, state, and federal regulations.
7. Products must be installed according to manufacturers' recommendations.
8. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
9. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-

## Non-Residential Projects Larger Than 100 kW

electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.

10. PV system components shall be properly labeled, including AC & DC disconnects (if present), solar generation meter, service panel (outside cover), and breakers inside the service panel.
11. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment.  
See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.
12. The system will in all cases have a material and full labor warranty of at least five years.

### **Requirements Specific to Non-Residential PV Systems Larger Than 100 kW**

1. The Non-Residential Customer System shall be operating, substantially complete and have produced an AC output at least 70% of the total array nameplate DC rating at PTC.<sup>5</sup>
2. Operation, Maintenance and Repair. The Customer shall be solely responsible for the operation, maintenance and repair of the Non-Residential Customer System and any and all costs and expenses associated therewith. Company will notify Customer of all Non-Residential Customer System repairs the Company determines are reasonably necessary to support proper continued electrical production of the Non-Residential Customer System. The Customer will notify the Company within five (5) business days of its receipt of any such Company repair notice if the repair requires the installation of a new inverter and/or PV module. The Customer shall complete any such repair that affects the Non-Residential Customer System performance and does not require the purchase of a new inverter or PV module(s) within five (5) business days of the Company's notice of the need for such repair. For any such repair that does require the purchase and installation of a new inverter and/or PV module, the Customer shall promptly commence and diligently pursue such repair to completion, provided, in no event shall such repair take more than thirty (30) days to complete. At all times while Company is receiving the environmental credits from the Non-Residential Customer System, Customer shall clean all PV modules in the Non-Residential Customer System as necessary to keep them free from foreign material that would visibly obscure the modules, including any dirt and/or oils.
3. Non-Residential Customer System Security. At all times during and after installation of the Non-Residential Customer System, the Customer shall use commercially reasonable efforts to provide adequate security to prevent damage or vandalism to the Non-Residential Customer System.
4. Company shall provide Customer with a revenue grade AC meter to be installed between the Non-Residential Customer System and the grid interconnection. This meter will not be used for billing, but shall be used for any official Non-Residential Customer System production output data. Company will retain ownership of the meter and be responsible for its repair if needed.

---

<sup>5</sup> PTC stands for "PVUSA Test Conditions." These standards are also referenced by the California Energy Commission. PTC conditions are based upon 1,000 W/m<sup>2</sup> solar irradiance, 20 degrees Celcius ambient temperature, and 1 m/s wind speed.

## Non-Residential Projects Larger Than 100 kW

5. Customer shall provide Company with all documentation reasonably requested by Company to demonstrate to the Commission that any environmental credits transferred under the Agreement were derived from an eligible technology, that the kWh generated are accurately reported and that the environmental credits have not expired or been used by any other entity for any purpose.
6. If certified proof cannot be provided of complete galvanic isolation of any and all DC from the AC output of the inverter(s) used in the Non-Residential Customer System through IEEE-1547 certification of the inverter, the Non-Residential Customer System shall include an isolation transformer installed between the inverter(s) and the grid interconnection. The transformer will be rated at full load continuous operation at 50 degrees C. at 125% of nameplate DC array rating and have an efficiency rating at nameplate DC array rating power of at least 98% as tested. The transformer will have at least one tap each of 2.5% and 5% both above and below the nominal voltage tap.

### **Additional Requirements for Off-Grid Systems**

1. The minimum Solar Electric array size shall be no less than 600 Wdc. For customers currently paying into the REST tariff the maximum Solar Electric array size shall not exceed 4,000 Wac. For customers currently not paying into the REST tariff, the maximum Solar Electric array size shall not exceed 2,000 Wac.
2. Off-grid systems will not be metered. Compliance reporting production will be based on an annual 20% capacity factor using nameplate DC rating for capacity.

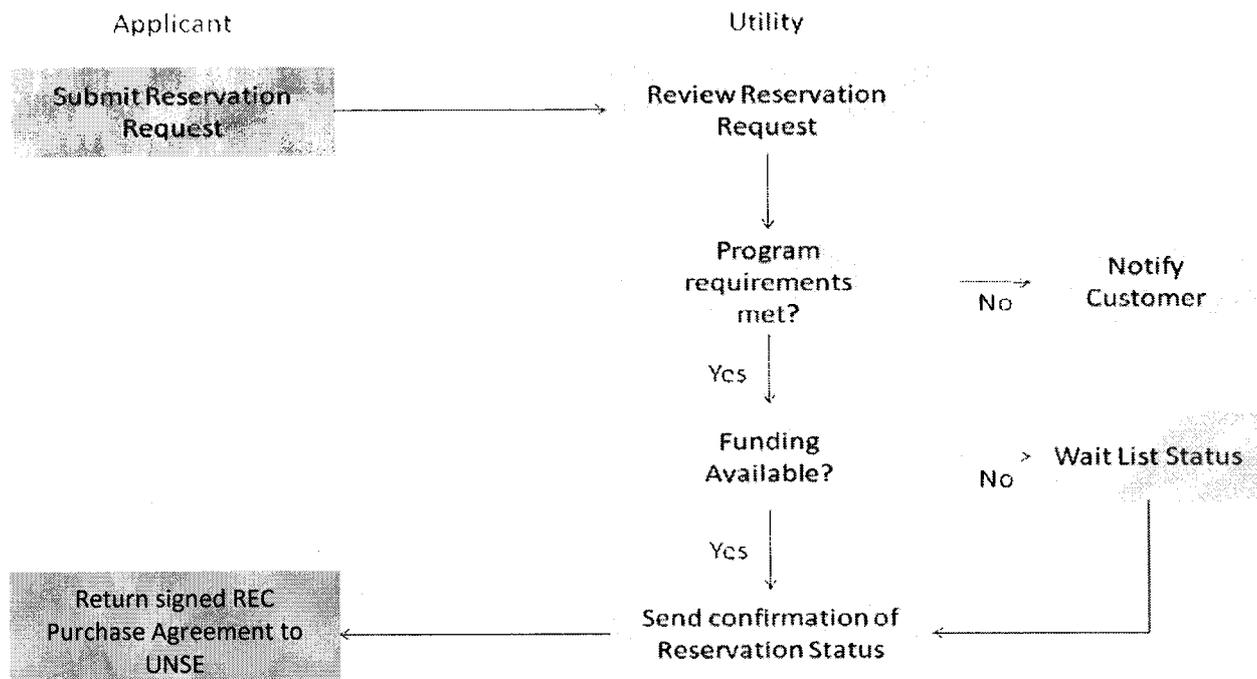
## Residential and Small Commercial Solar Water Heating and Space Heating Smaller than 35,000 kWh Equivalent Annual Production per Year

UNS Electric ("UNS Electric" or the "Company") is committed to assisting our customers in developing their own renewable generation resources, through a balanced and supportive renewable energy distributed generation incentive program. Our goal is to create a program that will provide incentives for affordable, environmentally sensitive, customer-sited renewable energy generation systems to supplement UNS Electric customer's energy needs. A properly designed system, matched to a customer's energy use, will provide a reduction in utility bills through the use of renewable resources. This program reflects our commitment to reduce the cost of developing renewable energy resources.

### PROCESS FOR OBTAINING INCENTIVES

The process for obtaining incentives from UNS Electric involves the flow of information between the applicant and UNS Electric. The following sections reflect the typical three-step process.

#### Step 1 – Reservation Request and Assignment of Reservation Status



The applicant must first submit the reservation request to UNS Electric. The reservation request includes information about the UNS Electric customer on whose property the system will be located, the system, the calculation of the incentive, and the installer of the system.

UNS Electric will review the reservation request to ensure the application conforms to program requirements.

## Solar Water Heating and Space Heating: Residential and Small Commercial

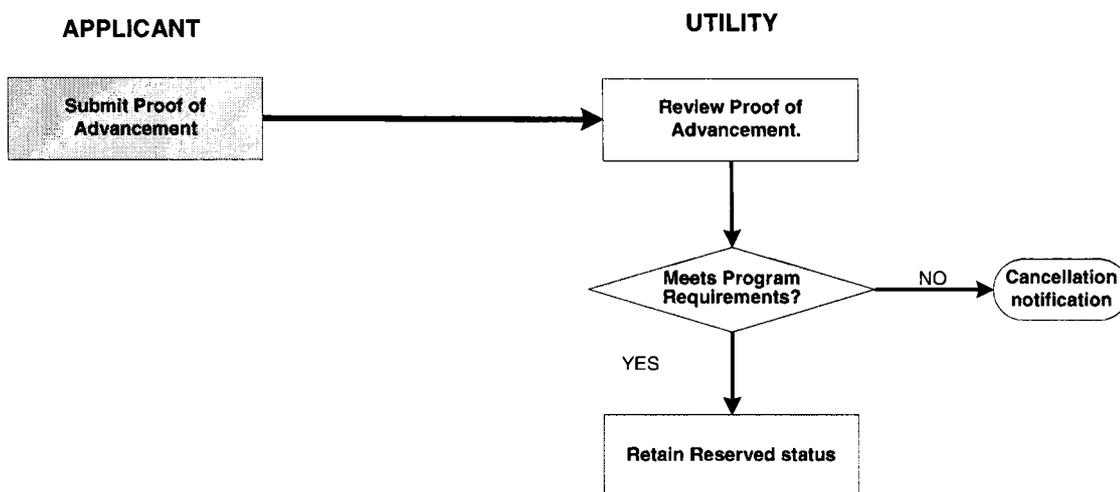
- Reservation requests for residential systems and small commercial systems with output smaller than a 35,000 kWh equivalent are processed on a first-come, first-reserved basis.
- Reservation requests for residential systems and commercial systems with output smaller than a 35,000 kWh equivalent will be reviewed within 30 days of the utility's receipt of the request.

If the reservation request is approved, UNS Electric will send a confirmation to the applicant. A reservation request may be denied for two different reasons, each with its own consequences:

- The reservation request may be denied because it is not in conformance with program requirements. In this case, UNS Electric will send notice that the request is cancelled.
- The reservation request may be denied because funding is not available. In this case, UNS Electric will send a notification to the applicant that the request will be placed on a waiting list.

After reviewing the reservation request, UNS Electric will assign a reservation status.

### Step 2 – Proof of Advancement



Applicants for residential systems and commercial systems with annual output smaller than a 35,000 kWh equivalent must submit proof of project advancement to UNS Electric within 60 days of the date of reservation confirmation from UNS Electric to retain the reservation. Applicants for residential systems and commercial systems with output smaller than a 35,000 kWh equivalent must provide copies of City/County inspection permits to UNS Electric as documentation of the proof of project advancement. If those permits are not available within 60 days of the date of reservation confirmation, the applicant may also provide these documents in place of the permits:

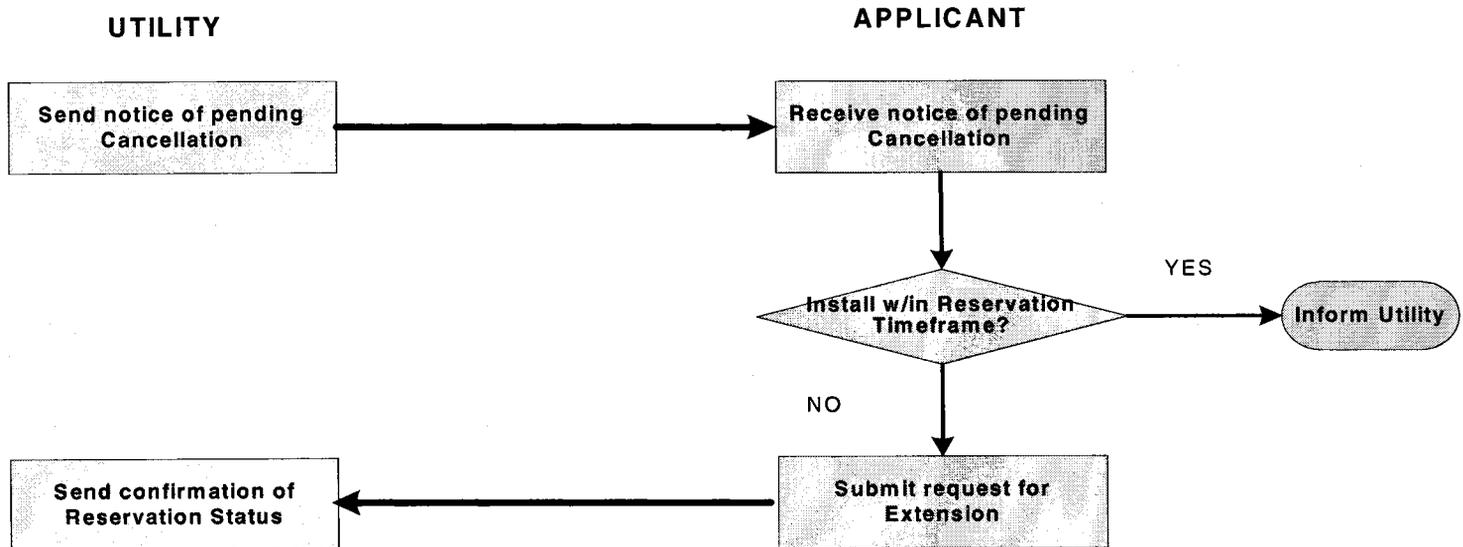
- Signed agreement
- Assignment of Payment form
- Initial city/county permit application or actual receipt of final acceptance inspection paperwork from the city/county.

If proof of project advancement is not received within the specified timeframe, the applicant will be notified that the reservation is cancelled. The applicant has the option to reapply for funding after the

## Solar Water Heating and Space Heating: Residential and Small Commercial

reservation has been cancelled. The request will be processed in the same manner as a new project reservation and will be contingent upon availability of funding at the time the new application is received.

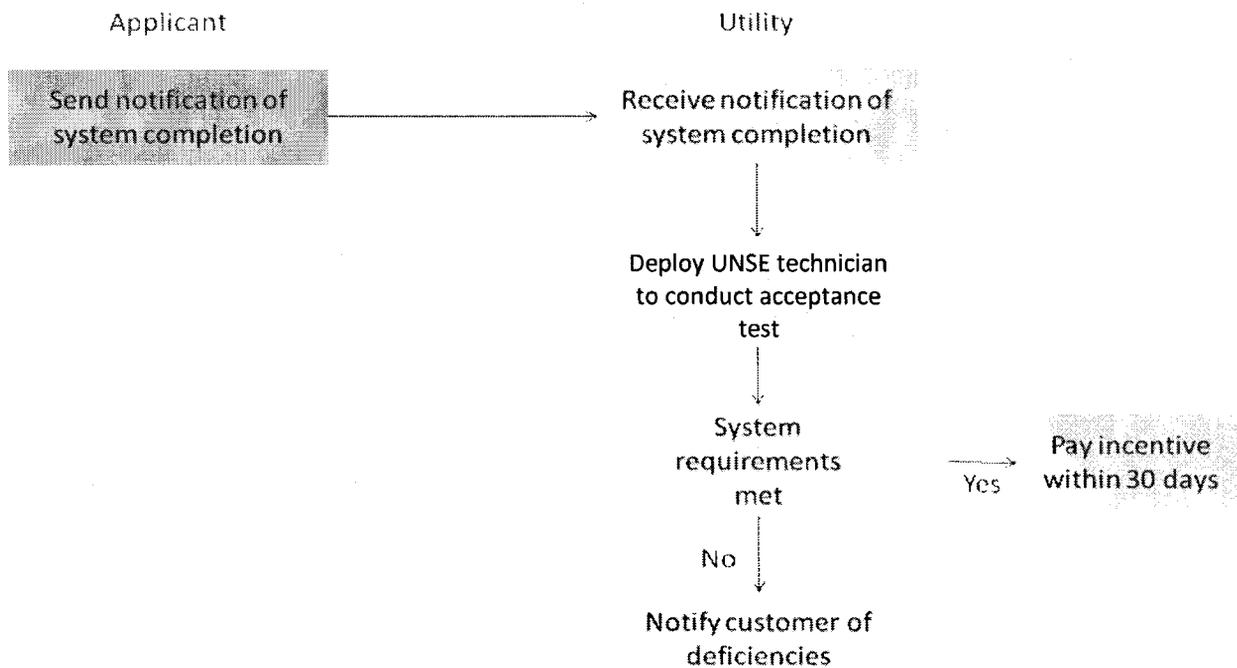
### Conditional Step – Extension / Cancellation



If all project requirements are not met within 180 days of the date of the reservation confirmation, the applicant must apply for an extension to remain eligible for the incentive. UNS Electric will trigger this request for extension with a notice of the pending cancellation 30 days prior to the date of scheduled cancellation. UNS Electric will grant an extension for up to 90 days following timely receipt of a customer's request for extension. UNS Electric may approve written extension requests detailing the conditions for delay for periods beyond 90 days under extenuating circumstances.

If all program requirements have not been met within the reservation timeframe, a reservation request will be cancelled unless an extension is granted.

**Step 3 – Customer Requests Payment**



Upon project completion, the customer must notify UNS Electric that the system has been placed in service. This should be done by submitting a copy of the city/county final inspection permit. When UNS Electric receives notification that the system is complete, UNS Electric will perform an “acceptance test.” The acceptance test requires that a UNS Electric inspector test the system’s compliance with the required specifications and its performance and determine that it is in line with UNS Electric requirements.

If the system meets UNS Electric specifications and performance requirements, UNS Electric will pay the customer the UFI within 30 days of the acceptance test. If the system fails to meet UNS Electric specifications and performance requirements, UNS Electric will notify the customer within 5 days of the acceptance test. The customer will then have 30 days to address the deficiencies and notify UNS Electric that the system is ready to be retested.

**INCENTIVE LEVELS FOR RESIDENTIAL AND SMALL COMMERCIAL SOLAR WATER HEATING AND SPACE HEATING SYSTEMS**

Solar water heating and space heating in residential and small commercial applications are eligible for up-front incentives (“UFIs”). UFIs are those incentives where the customer receives a one-time payment based on the system’s designed capacity. Table 3 identifies the incentives available for residential and small commercial solar water heating and space heating systems.

Solar Water Heating and Space Heating: Residential and Small Commercial

**Table 3. Incentives for Residential and Small Commercial Solar Water Heating and Space Heating**

Year	Residential Incentive Level**	Small Commercial Incentive Level**
2010	\$750 plus \$0.25/kWh (max \$1,750)	\$750 plus \$0.50/kWh (max \$17,500)
2011*	\$750 plus \$0.25/kWh (max \$1,750)	\$750 plus \$0.50/kWh (max \$17,500)
2012*	\$750 plus \$0.25/kWh (max \$1,750)	\$750 plus \$0.50/kWh (max \$17,500)
2013*	\$750 plus \$0.25/kWh (max \$1,750)	\$750 plus \$0.50/kWh (max \$17,500)
2014*	\$750 plus \$0.25/kWh (max \$1,750)	\$750 plus \$0.50/kWh (max \$17,500)

Notes:

\*Indicates that the incentive for that year has not yet been approved by the Arizona Corporation Commission (“ACC” or the “Commission”). As such, these incentives are tentative and may change pending ACC approval.

\*\*Indicates estimated annual kWh production in first year.

# Energy savings rating is based on the SRCC OG-300 published rating or the UNS Electric-RECPP Space Heating Calculator. Rate applies to forecast/measured first year energy savings only.

- Small commercial customers will receive a UFI up to a collector system size with output smaller than 35,000 kWh equivalent. If a small commercial system is installed beyond that threshold, it must apply under the large commercial program.
- The UFI may not exceed 60% of total System Cost.
- The customer must pay at least 15% of the project cost, after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)
- Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.
- UNS Electric has adopted a standardized calculation method to support solar space heating system sizing and incentive payment. The display page of the spreadsheet calculation is presented in Attachment B.
- The bid evaluator reserves the right to award incentives to solar thermal projects other than those that meet the specifications outlined in Attachment A. In these cases, the system output must be less than or equivalent to 35,000 kWh per year. Incentives in these cases will be determined by the bid evaluator.

The incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation approval, the incentive amount reserved will not be changed as long as the reservation is not cancelled.

In return for UNS Electric’s payment of a UFI, UNS Electric will be given complete and irrevocable ownership of the RECs until December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year after completion of installation of the system. Operational life during that time frame must be supported by system warranty or planned maintenance schedules.

**PROJECT FUNDING**

Funds will be made available for reservations on a first-come, first-reserved basis, until annual funding is reserved. Reservations which are rejected as a result of insufficient funds will be placed on a waiting list and offered the opportunity to retain their original reservation date for one additional quarter without

the need to resubmit application documentation. If the incentive level has changed from the date of the original reservation to the date when the reservation is approved, the new incentive level shall be applied.

### **THE FINE PRINT**

In addition to the other requirements described in this hand book, there are two other types of program details of which system owners and installers should be aware:

1. Installer qualifications
2. System removal

These are described in further detail below.

### **Installer Qualifications**

All systems receiving incentives under the RECPP must be installed by a qualified installer. The following requirements must be submitted by the applicant as part of the reservation request. UNS Electric will verify that the installer meets the following minimum qualifications prior to confirming a reservation request:

1. The installer must possess a valid license on file with the Arizona Registrar of Contractors (“AZROC”) with a license classification appropriate for the technology being installed. Alternatively, the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. A copy of the AZROC license must be provided as part of the reservation request.
2. The installer must possess an Arizona business license that is active and in good standing.

Installers may request that the above information be retained on file with UNS Electric; however, under this option the installer must certify that the information on file remains current with the submission of each reservation request. Information on file must be renewed yearly.

### **System Removal**

If receiving a UFI, neither the Qualifying System nor any components thereof shall be removed from the premises (by either the applicant or future owners or occupants of the property) until December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year following completion of system installation of the renewable energy system, without express agreement of UNS Electric. If the Qualifying System is removed by any party in violation of this provision, customer shall immediately reimburse UNS Electric all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that an additional incentive is not provided for any new distributed renewable energy resource system on that site until the REC contracted operational life of the original system has been completed.

UNS Electric shall attempt to monitor the number of missing or non-working distributed generation systems and shall summarize its observations in its annual Compliance Report.

**Attachment A**  
**Qualifications for Residential Solar Water Heating and Space Heating**

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement which is in conflict with a site-specific governmental requirement shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

Equipment Specifications

1. Domestic Solar Water Heating systems will be rated by the SRCC and meet the OG-300 system standard. Systems that include OG-100 collectors, but are not certified under OG-300, will need to be verified by submitting either a testing certification for a substantially similar system prepared by a publicly funded laboratory or by submitting an engineering report stamped by a registered third-party professional engineer detailing annual energy savings. Solar Space Heating systems will utilize OG-100 collectors.
2. Solar Space Heating systems will be sized in conformance with the Solar Space Heating Incentive Calculation Procedure (Attachment B.) Compliance reporting production will be based on the design energy savings submitted at time of application.
3. Active, open-loop systems are not eligible for RECPP incentives except for active, open-loop systems that have a proven technology or design that limits scaling and internal corrosion of system piping, and includes appropriate automatic methods for freeze protection and prevents stagnation temperatures that exceed 250 degrees Fahrenheit ("F"). under all conditions at the location of installation. Details disclosing conformance with this exception shall be submitted as part of the manufacturer's verification documentation.
4. The 'high' limit on all Domestic Water Heating controllers shall be set no higher than 160 degrees F.
5. Active thermal storage for solar space heating systems shall use water as the storage element.
6. Contractors must provide a minimum of a five year equipment warranty as provided by the system manufacturer, including a minimum warranty period of five years for repair/replacement service to the customer.
7. Domestic Water Heating systems that are installed as an addition to an existing system or are submitted as a customer designed system or not certified to OG-300 must be specifically reviewed and approved by the utility.
8. The solar collector, heat exchangers, and storage elements shall have an equipment warranty of at least 5 years to qualify for a UFI and at least five years to qualify either for a UFI or for a PBI.

## Solar Water Heating and Space Heating: Residential and Small Commercial

### Installation Guidance

1. The system shall be installed with a horizontal tilt angle between 20 degrees and 60 degrees (40 and 60 degrees for space heating applications), and an azimuth angle of +/- 60 degrees of due south (+/- 20 degrees for space heating applications). It is recommended that collectors be positioned for optimum winter heating conditions at a minimum tilt angle of 45 degrees above horizontal, or as recommended by the manufacturer for the specific collector type and geographic location of installation. Azimuth or tilt angles outside these parameters may be reviewed and approved by the utility, at their discretion.
2. All systems should be installed such that the energy collection system is substantially unshaded and should have substantially unobstructed exposure to direct sunlight between the hours of 9:00 a.m. and 3:00 p.m. Solar Hot Water de-rating chart (see Attachment C and D in this section) may be used to adjust incentive level based upon affected output due to shading.
3. Heat exchange fluid in glycol systems should be tested, flushed and refilled with new fluid as necessary or at a minimum every five years or sooner per manufacturer's recommendations.
4. It is recommended that the anode rod be checked and replaced per manufacturer's recommendations, but no less frequently than every five years.
5. It is recommended that the system design include a timer, switch, and a temperature sensor on the backup element of the storage tank.
6. The collectors and storage tank should be in close proximity to the backup system and house distribution system to avoid excessive pressure or temperature losses.
7. It is recommended that in areas where water quality problems are reported to have reduced the expected life of a solar water heater, that a water quality test is performed for each residence to screen for materials that through interaction with the materials of the proposed solar water heating system may reduce the expected operational life of the system components. The customer should consider contacting the manufacturer to determine if warranty or operational life will be affected.
8. In areas subject to snow accumulation, sufficient clearance will be provided to allow a 12" snowfall to be shed from a solar collector without shadowing any part of the collector.
9. Ball valves shall be used throughout the system. Gate valves shall not be used in any new installation systems.
10. Pipes carrying heated fluids shall be insulated for thermal energy conservation as well as personnel protection when exposed to ambient conditions, although this is highly recommended in either situation.
11. UNS Electric reserves the right to modify standards as technology changes on a case by case basis, pending independent laboratory analysis, Professional Engineer ("PE") stamp, or UNS Electric engineering analysis.

### General Requirements

1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.
3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale on new installations.

## Solar Water Heating and Space Heating: Residential and Small Commercial

5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment. For these requirements, see ACC Decision Number 69674 located at <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf>
8. Existing systems that are replacing major components may submitted and reviewed by the utility for the retrofit category of the program's incentive.

**Attachment B**  
**Solar Space Heating UFI Incentive Calculation Procedure**

UNS Electric has adopted a standardized calculation method to support system sizing and incentive payment. The display page of the spreadsheet calculation is presented in Attachment B.

The solar space heating incentive calculation does not suggest or imply that a full energy audit is required to qualify for the solar space heating incentive. The intent is that industry professionals can utilize the calculation tool to aid in facilitating sound system design.

The effective use of the solar space heating incentive calculation is contingent on a Building Design Review. The Building Design Review calculations, inputs and outputs will be determined and specified as part of the reservation request. It is noted that stakeholder acceptance of the proposed calculation tool is conditioned on the future development of standardized design tools, potentially including input tables and charts.

UNS Electric believes that the proposed approach reflects sound design principles and uses inputs which should be available to professionals in this industry segment. UNS Electric does, however, recognize that the approach used in the standardized calculation is not currently universally applied. UNS Electric proposes that continuing efforts be made to develop standard input charts and tables to increase the efficiency of the method's application. In addition, it is the expectation of UNS Electric that the standard calculation can, in most instances, be implemented by practitioners in the solar space heating industry. UNS Electric supports industry collaborative efforts to increase technical knowledge development in this specific area.

## Solar Space Heating UFI Incentive Calculation Procedure.

In Advance, please perform the Design Review and Utility Bill Review (if Applicable) for numbers to enter in Steps #1, #2 and #5.

Min Elevation	Max Elevation	Heating Season Days	Daily Panel Heat Output
-1000	1000	105	0
1001	3000	140	0
3001	5000	175	0
5001	7000	210	0
7001	9000	245	0
9001	11000	280	0

Category:	Delta T	Clear Day
A	-9 Deg. F.	0
B	+9 Deg. F.	0
C	+36 Deg. F.	0
D	+90 Deg. F.	0
E	+144 Deg. F.	0

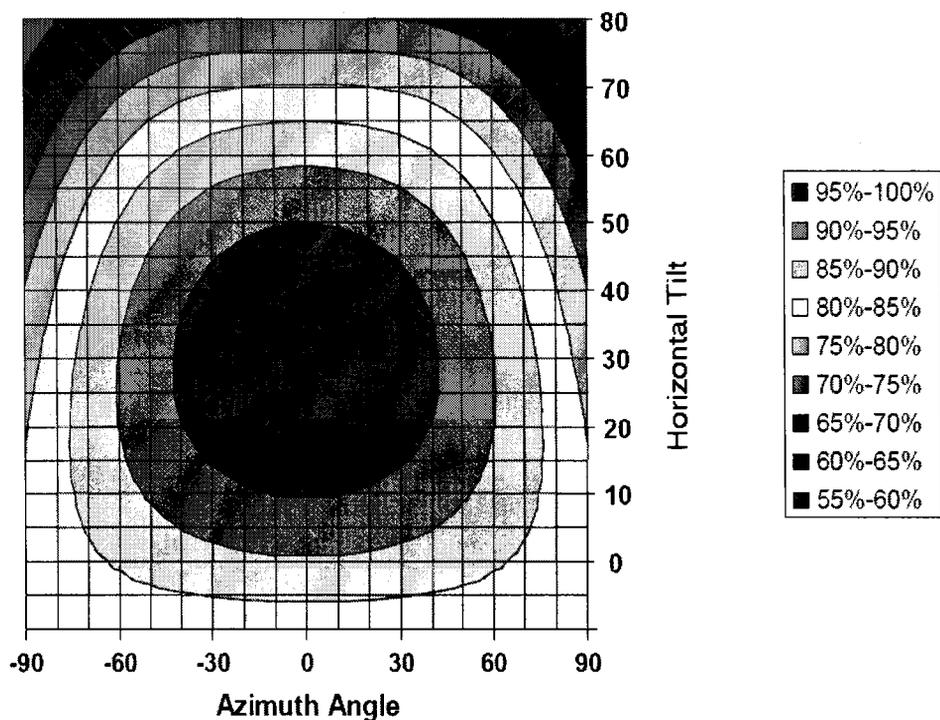
Enter Solar Panel Make and Model Number Selected for Project:

- Step #1:** Enter the result of the Design Review of the Design Annual Building Loss =  BTU/Year
- Step #2:** Enter the result of the Utility Bill Review of the Actual Annual Building Loss: (If not Electric, Natural Gas or Propane Heat, enter 0) =  BTU/Year
- Step #3:** Calculate the Lesser of the Result in Step #1 & Step #2 = This is the Annual Building Heat Requirement. 0 BTU/Year
- Step #4:** Enter Elevation of the Solar Space Heated Building:  Feet AMSL
- Step #4 cont:** Number of Heating Days per Heating Season from Elevation Zone Table: 105 Days per Year
- Step #4 cont:** Calculate Average Daily Building Heat Requirement = 0 BTU/Day
- Step #5:** Enter Passive Heat Storage Specific Heat Capacity from Building Design Review:  BTU/Deg. F.
- Step #5 cont:** Enter Maximum Daily Room Temperature Variation Allowed by Building Occupants: (Max of 10 Degrees F.)  Degrees F.
- Step #5 cont:** Calculate Maximum Passive Heat Storage Capacity = 0 BTU
- Step #5 cont:** Enter Total Active Heat Storage Heat Capacity from Building Design Review:  BTU
- Step #5 cont:** Calculate Maximum Total Heat Storage Capacity = 0 BTU
- Step #6:** Calculate the Lesser of the Average Daily Building Heat Requirement in Step #4 and the Maximum Total Storage Capacity in Step #5. This is the Maximum Useful Daily Solar Heat Input. 0 BTU/Day
- Step #7:** Size the Solar Panels based on a total daily solar heat input no greater than the Maximum Useful Daily Solar Heat Input. Enter the single panel SRCC OG-100 Collector Thermal Performance Rating data in the Table Above. 0 BTU/Day per Panel
- Step #7cont:** Enter the Total number of solar panels to be installed:  # of Panels
- Step #7cont:** Calculate the Average Expected Daily Solar Heat Input: 0 BTU/Day
- Step #8:** Calculate the Expected Annual Useful Solar KWH Heat Input using the Number of Heating Days times the Average Expected Daily Solar Heat Input / 3415 BTU/KWH: 0 KWH/Year
- Step #9:** Enter the UFI per first year KWH UCPP Incentive Rate:  \$/KWH
- Step #9 cont:** Calculate the Total Maximum UFI Payment Subject to Possible Limitation by the 50% of Initial Cost Cap & 15% Minimum Customer Contribution: \$0.00 \$
- Step #10:** Enter the Total Solar Space Heating System Initial Cost: This should not include costs for Passive Heat Storage or Building Heating System.  \$
- Step #10 cont:** Calculate the Total Expected Federal and Arizona Incentives for this Project: \$0.00 \$
- Step #10 cont:** Calculate the 15% minimum of the Total Solar Space Heating System Initial Cost to be paid by Customer: \$0.00 \$
- Step #10 cont:** Calculate the Total Actual UFI Payment: \$0.00 \$

Attachment C

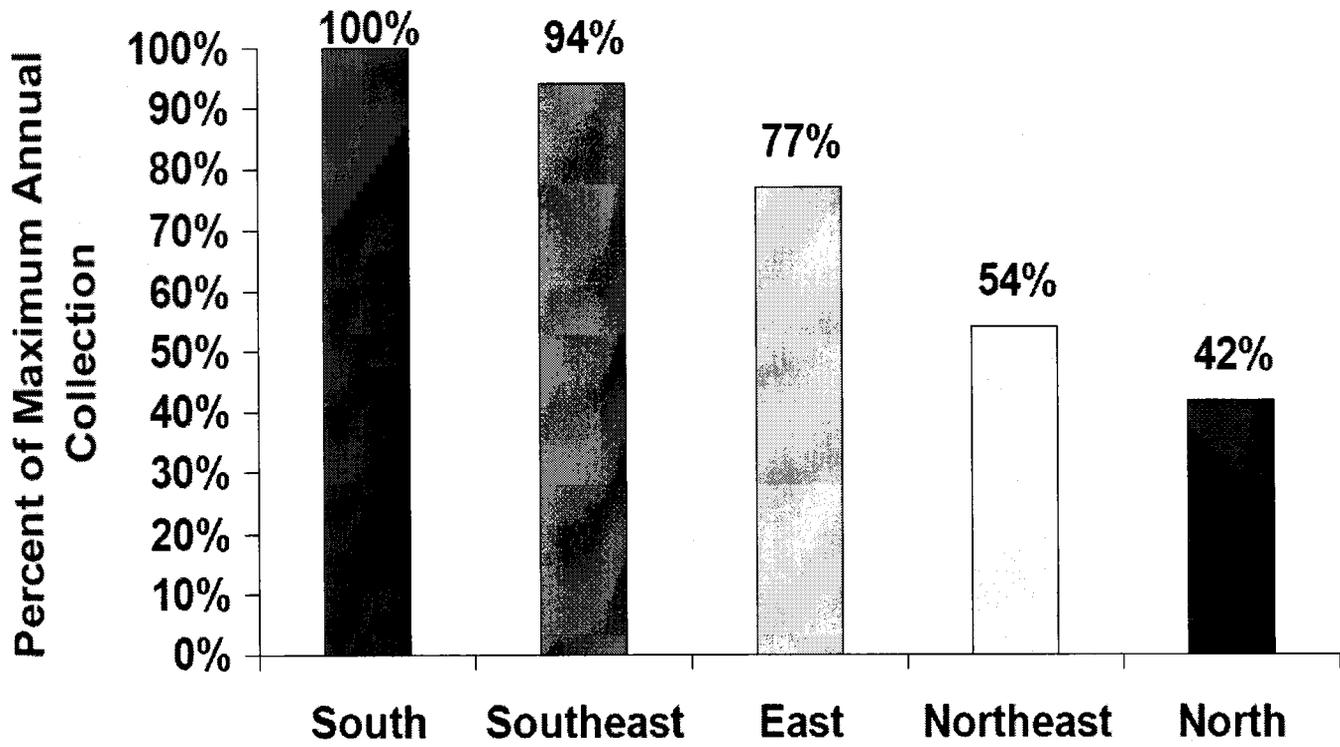
Solar Hot Water Off-Angle and Shading Annual Energy Derating Chart

# Orientation Effect on Annual Output



If the SHW system falls outside of the 95-100% performance band, then the UFI for the system will be derated. The incentive will be derated based on the decrease in annual energy output anticipated by this chart.

**Attachment D**  
**Solar Hot Water System Azimuth Angle Derating Chart**



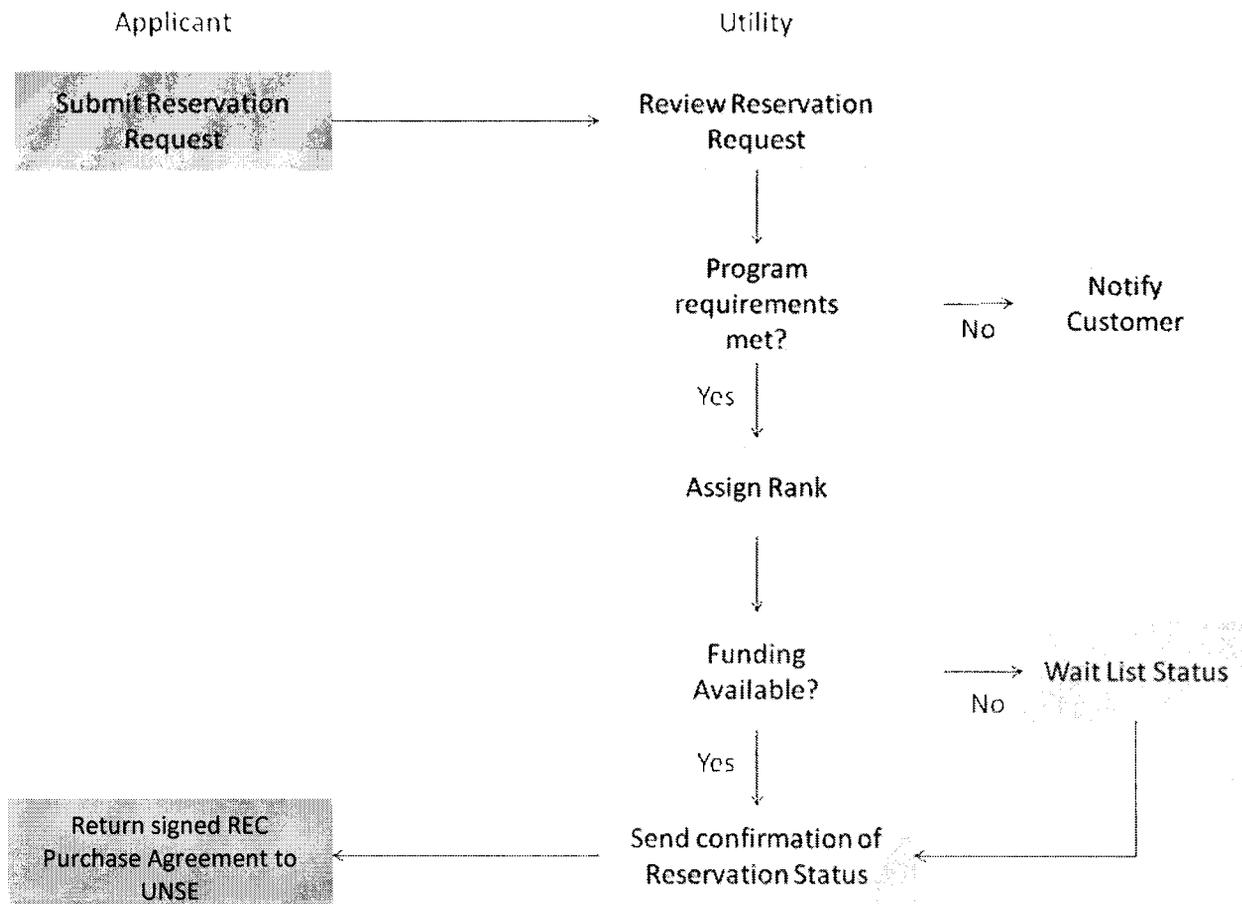
## Large Commercial Solar Water Heating and Space Heating: Systems with Annual Production Output Larger Than 35,000 kWh Equivalent

UNS Electric (“UNS Electric” or the “Company”) is committed to assisting our customers in developing their own renewable generation resources, through a balanced and supportive renewable energy distributed generation incentive program. Our goal is to create a program that will provide incentives for affordable, environmentally sensitive, customer-sited renewable energy generation systems to supplement UNS Electric customer’s energy needs. A properly designed system, matched to a customer’s energy use, will provide a reduction in utility bills through the use of renewable resources. This program reflects our commitment to reduce the cost of developing renewable energy resources.

### PROCESS FOR OBTAINING INCENTIVES

The process for obtaining incentives from UNS Electric involves the flow of information between the applicant and UNS Electric. The following sections reflect the typical four-step process.

#### Step 1 – Reservation Request and Assignment of Reservation Status



## Solar Water Heating and Space Heating: Large Commercial

The applicant must first submit the reservation request to UNS Electric. The reservation request includes information about the UNS Electric customer on whose property the system will be located, the system, the calculation of the incentive, and the installer of the system.

UNS Electric will review the reservation request within 90 days of receipt of the request to ensure the application conforms to program requirements.

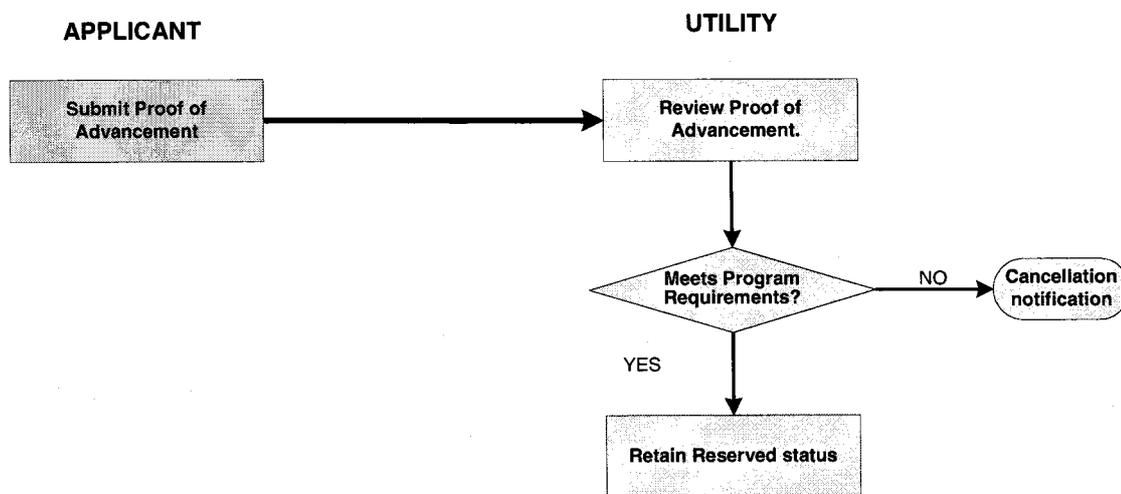
- Reservation requests for non-residential systems larger than 35,000 kWh equivalent annual production are assigned a rank based on the lowest expected life cycle credit purchase cost and likelihood of construction.
- In the event of a tie in the ranking, when the program would be fully subscribed if both projects were given reservation status, funds will be awarded based on the date of receipt of the completed reservation request.

If the reservation request is approved, UNS Electric will send a confirmation to the applicant. A reservation request may be denied for two different reasons, each with its own consequences:

- The reservation request may be denied because it is not in conformance with program requirements. In this case, UNS Electric will send notice that the request is cancelled.
- The reservation request may be denied because funding is not available. In this case, UNS Electric will send a notification to the applicant that the request will be placed on a waiting list.

After reviewing the reservation request, UNS Electric will assign a reservation status.

### Step 2 – Proof of Advancement



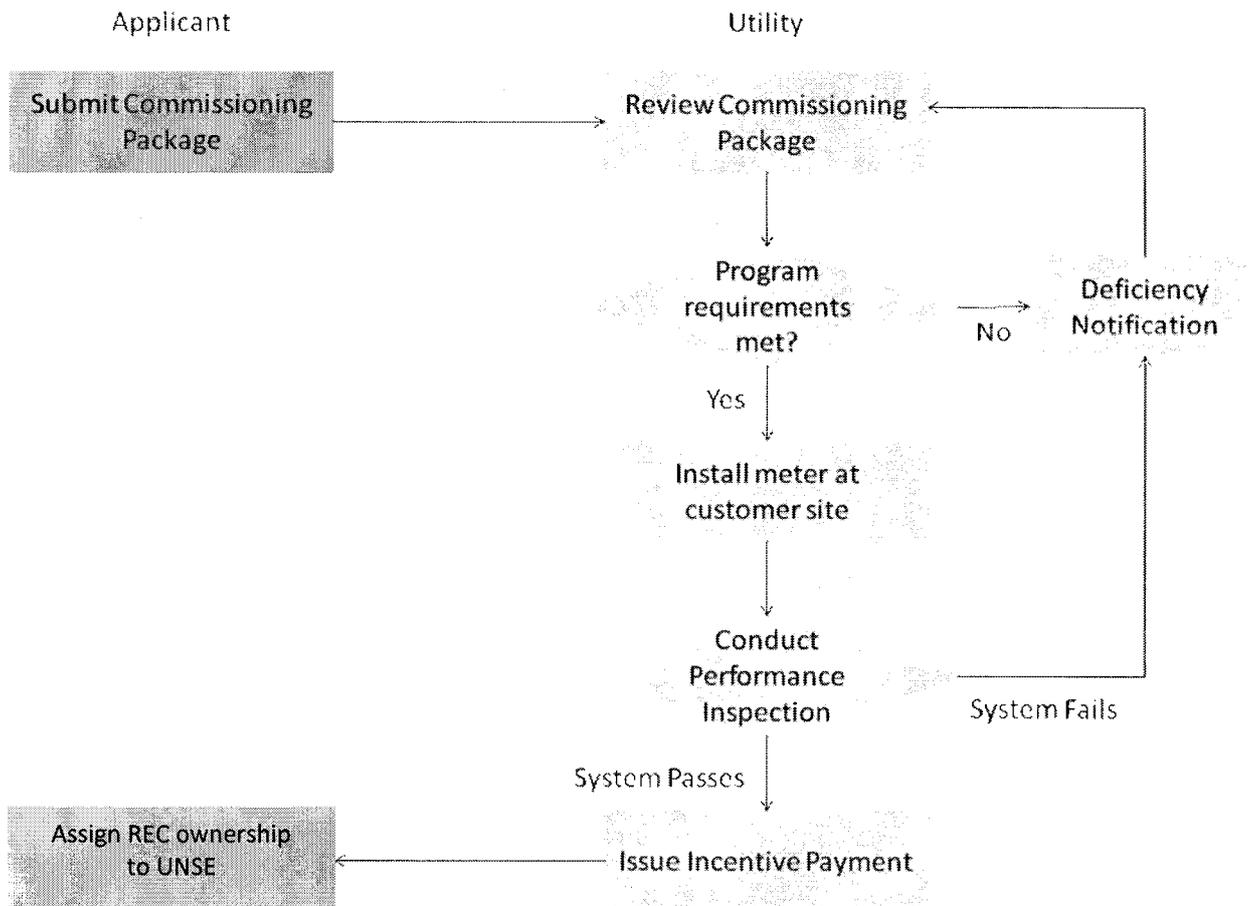
Applicants for non-residential systems larger than 35,000 kWh equivalent annual production output must submit proof of project advancement to UNS Electric within 120 days of the date of reservation confirmation from UNS Electric to retain the reservation. At a minimum, the Proof of Project Advancement documentation for a non-residential project larger than 35,000 kWh equivalent annual production output will include the following:

## Solar Water Heating and Space Heating: Large Commercial

- A project agreement (between customer and installer);
- An executed installation agreement including all project participants;
- Building and/or construction permits and/or a full set of design development or construction drawings (80% or more complete).

If proof of project advancement is not received within the specified timeframe, the customer will be notified that the reservation is cancelled. The applicant has the option to reapply for funding after the reservation has been cancelled. The request will be processed in the same manner as a new project reservation and will be contingent upon availability of funding at the time the new application is received.

### Step 3 – System Commissioning For Non-Residential Systems Larger Than 35,000 kWh equivalent annual production output



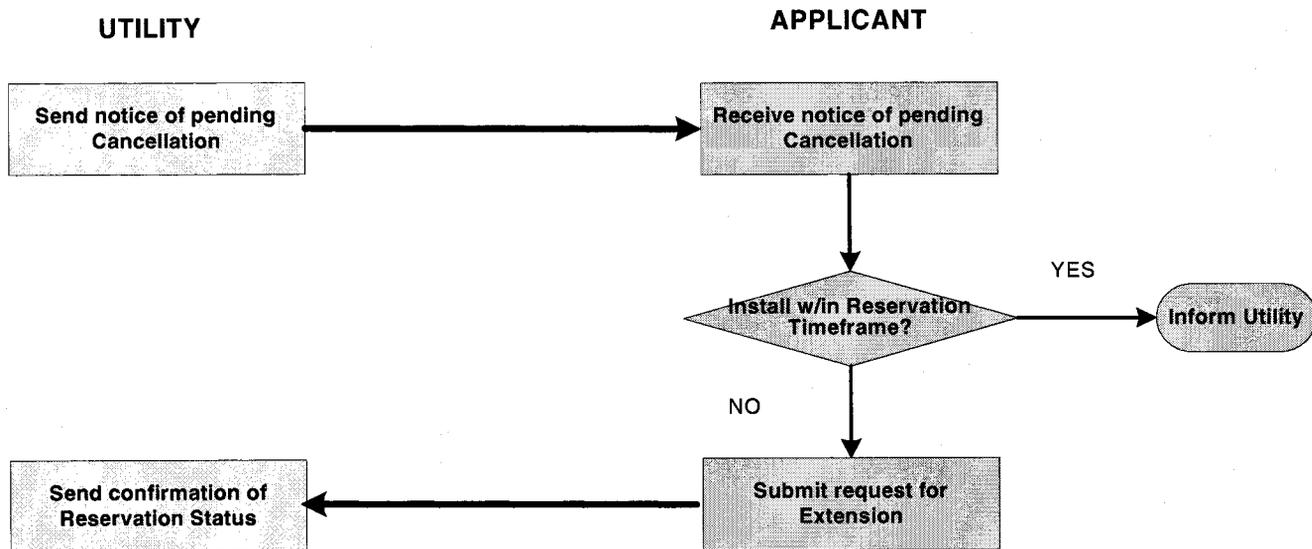
After the system has been commissioned, the applicant must submit a commissioning package to UNS Electric. UNS Electric will review the commissioning package and confirm that all program requirements have been met, including passing the interconnection inspection.

In addition, UNS Electric may, at its discretion, perform a conformance inspection of the system. UNS Electric will notify the applicant of the scheduled conformance inspection and the applicant must make

## Solar Water Heating and Space Heating: Large Commercial

the system available for inspection. In most cases in which a conformance inspection is conducted, an incentive payment may not be issued until after a qualifying system has passed the conformance inspection.

### Conditional Step – Extension / Cancellation



If all project requirements are not met within 365 days of the date of the reservation confirmation, the applicant must apply for an extension to remain eligible for the incentive. UNS Electric will trigger this request for extension with a notice of the pending cancellation 60 days prior to the date of scheduled cancellation. UNS Electric will grant an extension for up to 90 days following timely receipt of a customer's request for extension. UNS Electric may approve written extension requests detailing the conditions for delay for periods beyond 90 days under extenuating circumstances, or for systems larger than 1 MW.

If all program requirements have not been met within the reservation timeframe, a reservation request will be cancelled unless an extension is granted.

### Step 5 – Incentive Payment is Disbursed

Non-residential solar water heating and space heating systems larger than 35,000 kWh equivalent annual production output are eligible for a performance-based incentive (PBI). All PBI Project Agreements will include the following terms:

1. A project agreement between the applicant(s) and UNS Electric that details the assignment of energy and RECs and the assignment of payment must be completed before payments can be disbursed.

## Solar Water Heating and Space Heating: Large Commercial

2. Quarterly meter reads will be performed by UNS Electric and quarterly payments will be made to the assigned payee within 30 days of the meter reading based on quarterly kWh production. If the payment due is less than \$25.00, it will be held for the next payment period.
3. PBI payments will begin with the first quarterly production following receipt of the completed system commissioning package and conformance inspection, if required, and continue for the life of the agreement term. As part of this provision, it is understood that systems commissioned mid-quarter will receive payment only for the production of that partial quarter.

UNS Electric's payment of a PBI will assure UNS Electric complete and irrevocable ownership of the REC for the full duration of the PBI agreement. The agreement duration must fully coincide with the PBI payment schedule and the system must be supported by system warranty or planned maintenance schedules for the term of the agreement.

### INCENTIVE LEVELS FOR LARGE COMMERCIAL SOLAR WATER HEATING AND SPACE HEATING SYSTEMS

Solar water heating and space heating in large commercial applications are eligible for performance-based incentives (PBIs). In the case of solar water heating and space heating, the PBI allows the customer to collect incentive payments in relation to the actual system production. Table 4 identifies the maximum incentives available for large commercial solar water heating and space heating systems.

In all cases, incentive values listed in Table 4 are maximum values. PBIs are awarded through a bid process, which is discussed later in this section. Applicants are encouraged to submit bids requesting incentive amounts less than the maximums listed. Bids requesting a lower level of incentive payment than the maximum will have an increased chance of acceptance in the allocation ranking process.

**Table 4. Maximum Incentives for Large Commercial Solar Water Heating and Space Heating**

Year	Maximum Incentive Level for REC Agreement of the Specified Duration**		
	10-year REC Agreement	15-year REC Agreement	20-year REC Agreement
2010	\$0.057/kWh	\$0.052/kWh	\$0.051/kWh
2011*	\$0.057/kWh	\$0.052/kWh	\$0.051/kWh
2012*	\$0.057/kWh	\$0.052/kWh	\$0.051/kWh
2013*	\$0.057/kWh	\$0.052/kWh	\$0.051/kWh
2014*	\$0.057/kWh	\$0.052/kWh	\$0.051/kWh

Notes:

\*Indicates that the incentive for that year has not yet been approved by the Arizona Corporation Commission ("ACC" or the "Commission"). As such, these incentives are tentative and may change pending ACC approval.

\*\*Incentive level is based upon \$/kWh equivalent output

- There is no incentive cap for non-residential systems other than annual program funding considerations.
- A PBI cannot exceed 60% of the real project costs, defined as the undiscounted total system cost plus acceptable financing charges. Acceptable finance charges are finance charges used for the PBI incentive cap calculation and cannot exceed the current prime interest rate plus 5%. Financing charges must be disclosed as part of the commissioning package, if not disclosed before.

## Solar Water Heating and Space Heating: Large Commercial

- The customer must pay at least 15% of the project cost, after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)
- Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.
- UNS Electric has adopted a standardized calculation method to support solar space heating system sizing and incentive payment. The display page of the spreadsheet calculation is presented in Attachment B.
- The bid evaluator reserves the right to award incentives to solar thermal projects other than those that meet the specifications outlined in Attachment A. Incentives in these cases will be determined by the bid evaluator.

The incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation approval, the incentive amount reserved will not be changed as long as the reservation is not cancelled.

UNS Electric's payment of a PBI will assure UNS Electric complete and irrevocable ownership of the REC for the full duration of the PBI agreement. The agreement duration must fully coincide with the PBI payment schedule and the system must be supported by system warranty or planned maintenance schedules for the term of the agreement.

### **PROJECT FUNDING**

Non-residential funds will be committed as bids are accepted; funds will not be placed in reserve for later in the year. As a result, the budget may be committed before the end of the year. Funds will be made available to projects based on a ranking generated by lowest expected life cycle credit purchase cost as provided in the application and verified by UNS Electric. Projects submitted to the utility for reservation will be ranked based on a calculated index value for purposes of allocating non-residential funds as proposed in the application and verified by UNS Electric. Lowest lifecycle cost projects will be funded first. Indexing of the non-residential projects will be performed based on the verified incentive values and duration of the proposed agreement in the application for that project. In addition, the bid evaluator assesses the likelihood that the project will be completed. Projects with higher incentive payments result in a higher expected life cycle credit purchase cost and projects that produce more kWh result in a lower expected life cycle credit purchase cost. In the event of a tie in the ranking, when the program would be fully subscribed if both projects were given reservation status, funds will be awarded based on the date of receipt of the completed reservation request.

Reservation requests will reviewed by the utility on a monthly basis. Once reservation requests are fully ranked each month, notification of reservation approvals and rejections will be made in conformance with the rankings and available funding.

Funds unused in one period will be equally divided among the remaining periods in that year. Funds allocated to non-residential projects will not roll forward from one year to the next. Reservations which are rejected as a result of insufficient program funds may elect to carry forward into the next period and retain the original reservation date. The election must be made at the time of the original application.

## **THE FINE PRINT**

In addition to the other requirements described in this hand book, there are two other types of program details of which system owners and installers should be aware:

1. Installer qualifications
2. System removal

These are described in further detail below.

### **Installer Qualifications**

All systems receiving incentives under the RECPP must be installed by a qualified installer. The following requirements must be submitted by the applicant as part of the reservation request. UNS Electric will verify that the installer meets the following minimum qualifications prior to confirming a reservation request:

1. The installer must possess a valid license on file with the Arizona Registrar of Contractors ("AZROC") with a license classification appropriate for the technology being installed. Alternatively, the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. A copy of the AZROC license must be provided as part of the reservation request.
2. The installer must possess an Arizona business license that is active and in good standing.

Installers may request that the above information be retained on file with UNS Electric; however, under this option the installer must certify that the information on file remains current with the submission of each reservation request. Information on file must be renewed yearly.

### **System Removal**

If receiving a PBI, the Qualifying System or any components thereof shall not be removed from the premises until the last day of the final month of the final full calendar year of the applicable incentive payment term in the Agreement following completion of system installation of the renewable energy system, without express agreement from UNS Electric. If the Qualifying System is removed in violation of this provision, customer shall immediately reimburse UNS Electric all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that an additional incentive is not provided for any new distributed renewable energy resource system on that site until the REC contracted operational life of the original system has been completed.

UNS Electric shall attempt to monitor the number of missing or non-working distributed generation systems and shall summarize its observations in its annual Compliance Report.

**Attachment A**  
**Qualifications for Large Non-residential Solar Water Heating and Space Heating**

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement which is in conflict with a site-specific governmental requirement shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

Equipment Qualifications

1. Solar collector panels used will have a SRCC OG-100 certification or publicly-funded laboratory documentation showing the panel energy output under controlled and replicable test conditions.
2. If annual energy production is expected to exceed 10,000 kWh or equivalent, the system must include a dedicated performance customer-supplied meter to allow for monitoring of the amount of useful heat produced. Otherwise, compliance reporting production will be based on the design energy savings submitted at time of application.
3. Energy savings and designed output for the system will be verified by submitting either a testing certification for a substantially similar system prepared by a publicly funded laboratory or by submitting an engineering report stamped by a registered professional engineer. The engineering report shall provide a description of the system and major components, design criteria and performance expectations, applicable standards and/or codes, and a brief history of components in similar applications.
4. The solar collector, heat exchangers and storage elements shall have an equipment warranty of at least five years to qualify for a PBI.
5. The system will in all cases have a material and full labor warranty of at least five years.

Installation Guidance

1. The horizontal tilt angle of the collector panels should be between 20 and 60 degrees (30 and 60 degrees for space heating applications) and an azimuth angle +/- 45 degrees of south. Azimuth or tilt angles outside these parameters may be reviewed and approved by the utility, at their discretion
2. All systems should be installed such that the energy collection system is substantially unshaded and should have substantially unobstructed exposure to direct sunlight between the hours of 9:00 a.m. and 3:00 p.m. Solar Hot Water de-rating chart (see Attachment C and D in this section) may be used to adjust incentive level based upon affected output due to shading.

## Solar Water Heating and Space Heating: Large Commercial

3. The system installation should comply with the design manual.
4. Heat exchange fluid in glycol systems should be tested, flushed and refilled with new fluid as necessary or at a minimum every five years or sooner per manufacturer's recommendations.
5. It is recommended that the anode rod be checked and replaced per manufacturer's recommendations, but no less frequently than every five years.
6. It is recommended that the system design include a timer, switch, and a temperature sensor on the backup element of the storage tank.
7. It is recommended that in areas where water quality problems are reported to have reduced the expected life of a solar water heater, that a water quality test is performed for each residence to screen for materials that through interaction with the materials of the proposed solar water heating system may reduce the expected operational life of the system components. The customer should consider contacting the manufacturer to determine if warranty or operational life will be affected.
8. In areas subject to snow accumulation, sufficient clearance will be provided to allow a 12" snowfall to be shed from a solar collector without shadowing any part of the collector.
9. Each system shall have a comprehensive operation and maintenance manual at the customer's site, which includes a spare parts list, data sheets and flow diagrams indicating operating temperatures and pressures, maintenance schedules and description of testing methods and each customer must complete an initial start up and operation training review with the contractor at the time of system start up
10. UNS Electric reserves the right to modify standards as technology changes on a case by case basis, pending independent laboratory analysis, Professional Engineer ("PE") stamp, or UNS Electric engineering analysis

### General Requirements

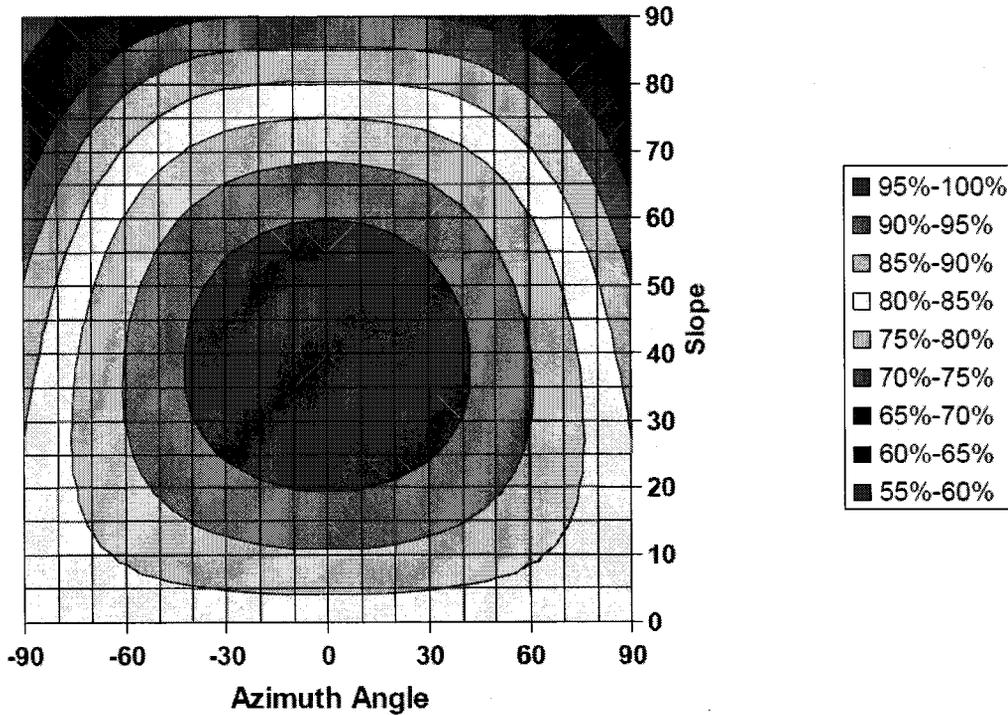
1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.
3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment. \_\_\_\_

Attachment C

Solar Hot Water Off-Angle and Shading Annual Energy Derating Chart

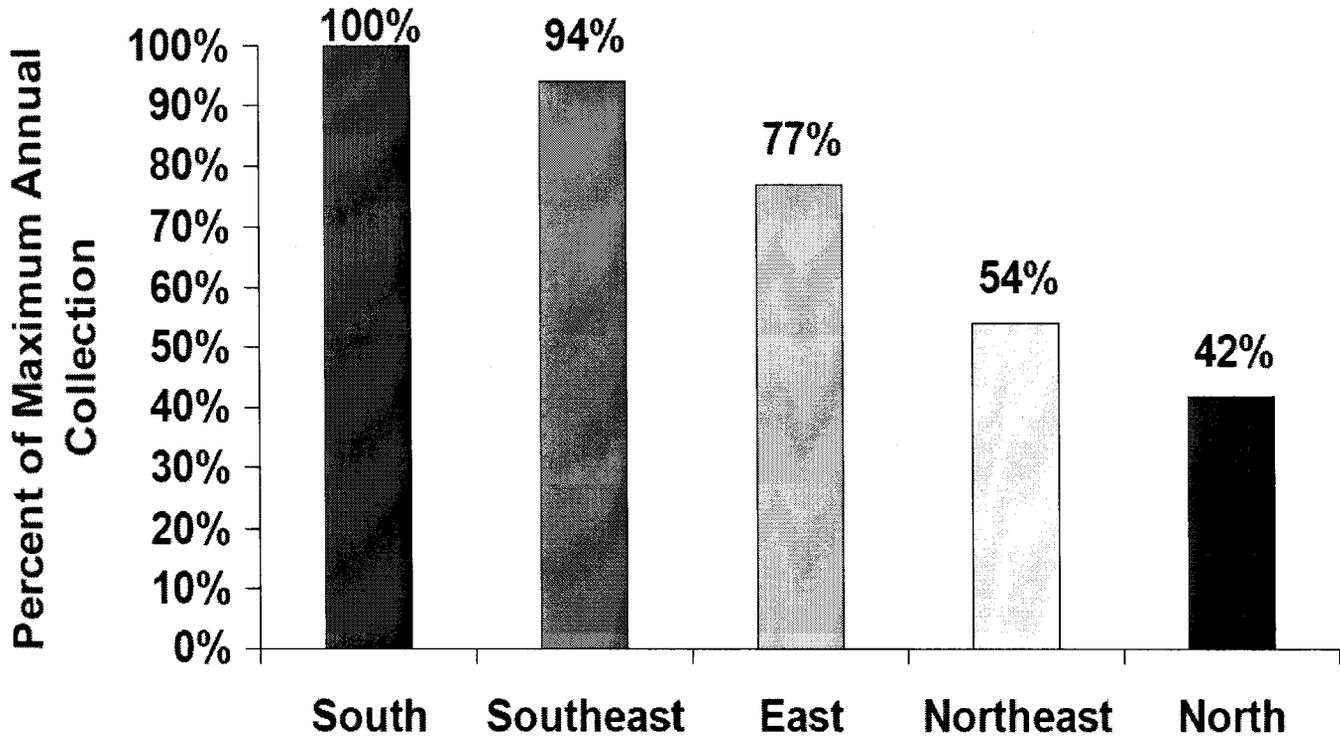
I

# Orientation Effect on Annual Output



If the SHW system falls outside of the 95-100% performance band, then the UFI for the system will be derated. The incentive will be derated based on the decrease in annual energy output anticipated by this chart.

**Attachment D**  
**Solar Hot Water System Azimuth Angle Derating Chart**



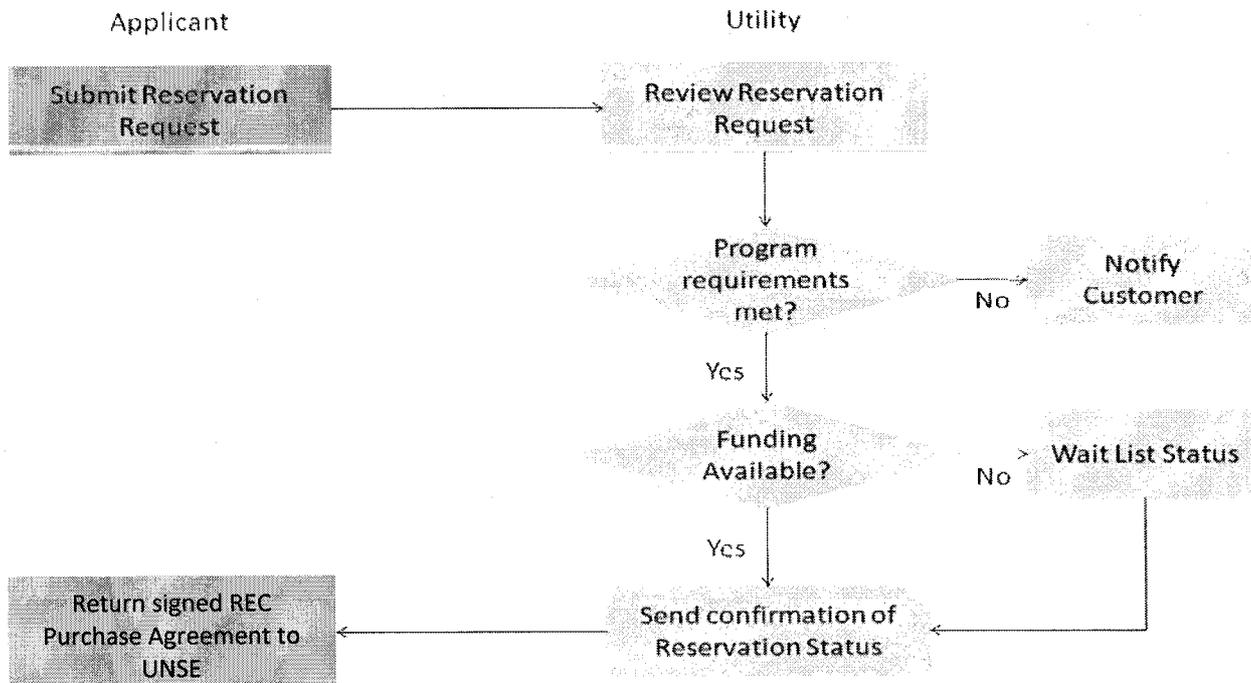
## Ground Source Heat Pumps: Residential and Commercial Applications

UNS Electric (“UNS Electric” or the “Company”) is committed to assisting our customers in developing their own renewable generation resources, through a balanced and supportive renewable energy distributed generation incentive program. Our goal is to create a program that will provide incentives for affordable, environmentally sensitive, customer-sited renewable energy generation systems to supplement UNS Electric customer’s energy needs. A properly designed system, matched to a customer’s energy use, will provide a reduction in utility bills through the use of renewable resources. This program reflects our commitment to reduce the cost of developing renewable energy resources.

### PROCESS FOR OBTAINING INCENTIVES

The process for obtaining incentives from UNS Electric involves the flow of information between the applicant and UNS Electric. The following sections reflect the typical three-step process.

#### Step 1 – Reservation Request and Assignment of Reservation Status



The applicant must first submit the reservation request to UNS Electric. The reservation request includes information about the UNS Electric customer on whose property the system will be located, the system, the calculation of the incentive, and the installer of the system.

UNS Electric will review the reservation request to ensure the application conforms to program requirements.

- Reservation requests for GSHP systems are processed on a first-come, first-reserved basis.
- Reservation requests for GSHP systems will be reviewed within 30 days of the utility’s receipt of the request.

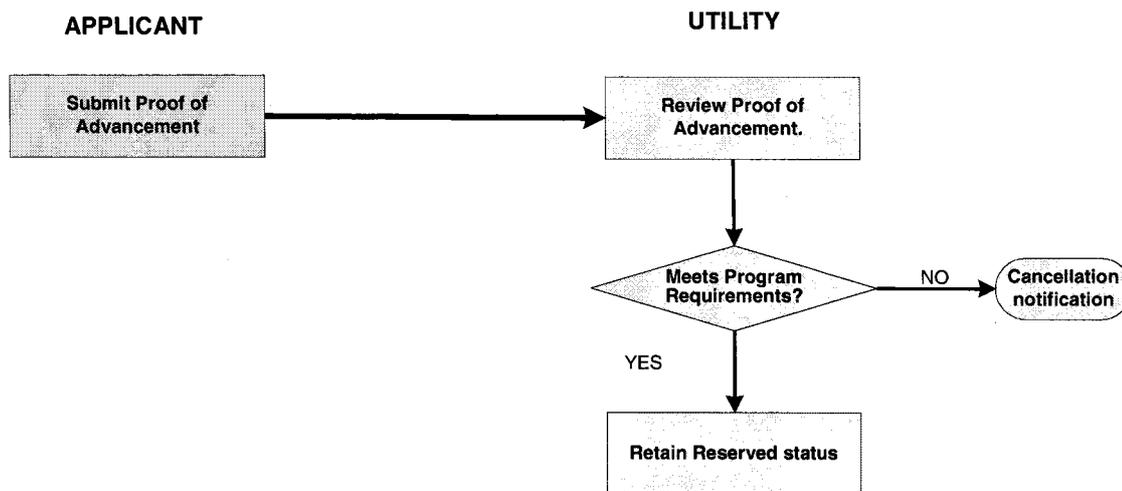
## Ground Source Heat Pumps: Residential and Commercial

If the reservation request is approved, UNS Electric will send a confirmation to the applicant. A reservation request may be denied for two different reasons, each with its own consequences:

- The reservation request may be denied because it is not in conformance with program requirements. In this case, UNS Electric will send notice that the request is cancelled.
- The reservation request may be denied because funding is not available. In this case, UNS Electric will send a notification to the applicant that the request will be placed on a waiting list.

After reviewing the reservation request, UNS Electric will assign a reservation status.

### Step 2 – Proof of Advancement

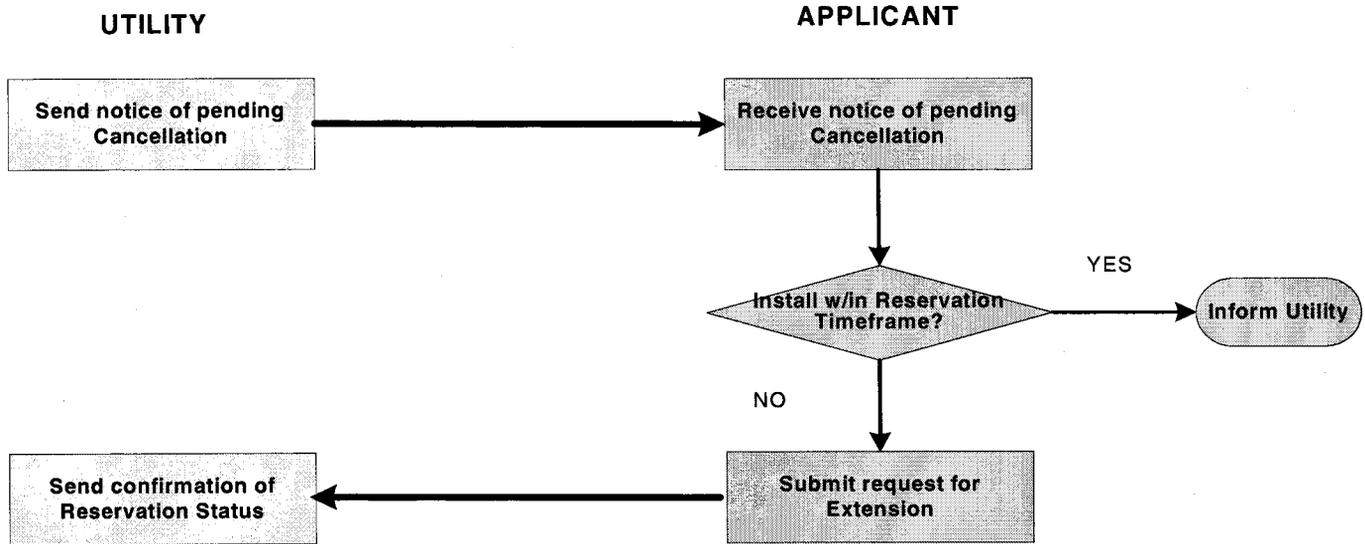


Applicants for GSHP systems must submit proof of project advancement to UNS Electric within 60 days of the date of reservation confirmation from UNS Electric to retain the reservation. Applicants for GSHP systems must provide copies of City/County inspection permits to UNS Electric as documentation of the proof of project advancement. If those permits are not available within 60 days of the date of reservation confirmation, the applicant may also provide these documents in place of the permits:

- Signed agreement
- Assignment of Payment form
- Initial city/county permit application or actual receipt of final acceptance inspection paperwork from the city/county.

If proof of project advancement is not received within the specified timeframe, the applicant will be notified that the reservation is cancelled. The applicant has the option to reapply for funding after the reservation has been cancelled. The request will be processed in the same manner as a new project reservation and will be contingent upon availability of funding at the time the new application is received.

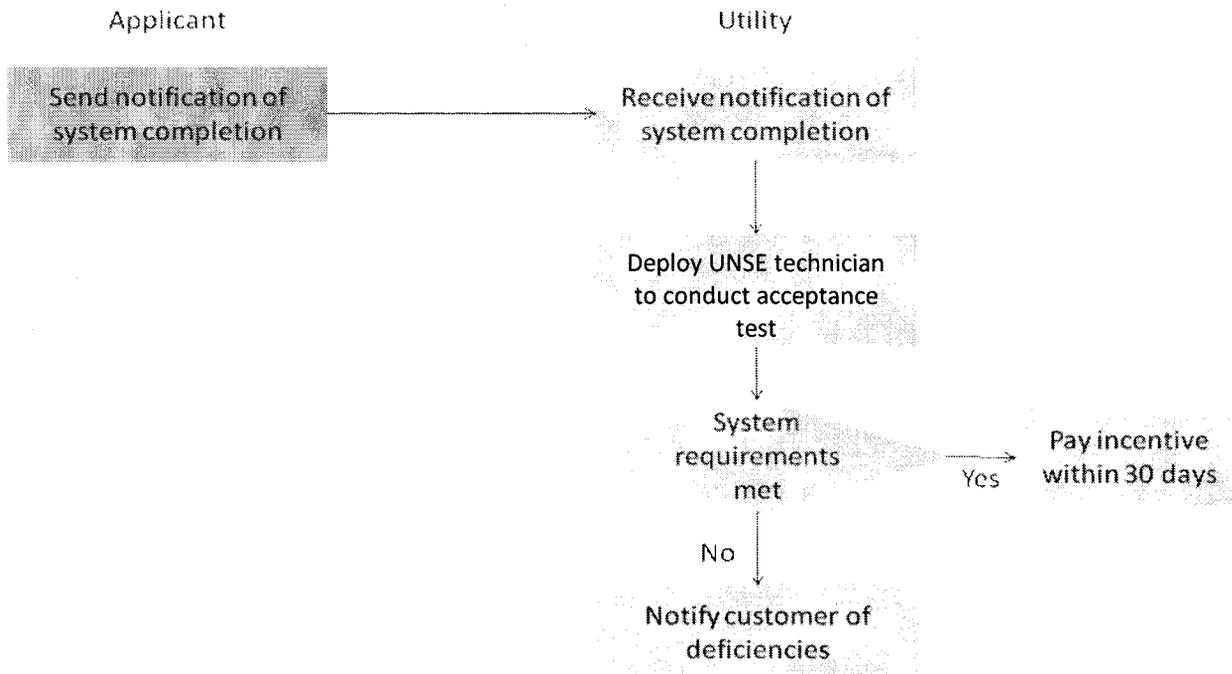
Conditional Step – Extension / Cancellation



If all project requirements are not met within 180 days of the date of the reservation confirmation, the applicant must apply for an extension to remain eligible for the incentive. UNS Electric will trigger this request for extension with a notice of the pending cancellation 30 days prior to the date of scheduled cancellation. UNS Electric will grant an extension for up to 90 days following timely receipt of a customer's request for extension. UNS Electric may approve written extension requests detailing the conditions for delay for periods beyond 90 days under extenuating circumstances.

If all program requirements have not been met within the reservation timeframe, a reservation request will be cancelled unless an extension is granted.

**Step 3 – Customer Requests Payment**



Upon project completion, the customer must notify UNS Electric that the system has been placed in service. This should be done by submitting a copy of the city/county final inspection permit. When UNS Electric receives notification that the system is complete, UNS Electric will perform an “acceptance test.” The acceptance test requires that a UNS Electric inspector test the system’s compliance with the required specifications and its performance and determine that it is in line with UNS Electric requirements.

If the system meets UNS Electric specifications and performance requirements, UNS Electric will pay the customer the UFI within 30 days of the acceptance test. If the system fails to meet UNS Electric specifications and performance requirements, UNS Electric will notify the customer within 5 days of the acceptance test. The customer will then have 30 days to address the deficiencies and notify UNS Electric that the system is ready to be retested.

**INCENTIVE LEVELS FOR RESIDENTIAL AND COMMERCIAL GROUND SOURCE HEAT PUMP SYSTEMS**

Residential and small commercial ground source heat pump systems are eligible for up-front incentives (“UFIs”). UFIs are those incentives where the customer receives a one-time payment based on the system’s designed capacity.

Table 5 identifies the incentives available for GSHP systems.

**Table 5. Up-Front Incentives for Residential and Commercial Ground Source Heat Pump Systems**

Year	Incentive Level
2010	\$500/ton

## Ground Source Heat Pumps: Residential and Commercial

2011*	\$500/ton
2012*	\$500/ton
2013*	\$500/ton
2014*	\$500/ton

### Notes:

\*Indicates that the incentive for that year has not yet been approved by the Arizona Corporation Commission (“ACC” or the “Commission”). As such, these incentives are tentative and may change pending ACC approval.

- There is no cap on the UFI that can be paid to residential customers.
- Commercial customers will receive a UFI up to a cap of 200 tons. If a commercial system is installed larger than 200 tons, it must apply under the large commercial program.
- The UFI may not exceed 30% of total system cost.
- The customer must pay at least 15% of the project cost, after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)
- Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.

The incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation approval, the incentive amount reserved will not be changed as long as the reservation is not cancelled.

In return for UNS Electric’s payment of a UFI, UNS Electric will be given complete and irrevocable ownership of the RECs until December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year after completion of installation of the system. Operational life during that time frame must be supported by system warranty or planned maintenance schedules.

### **PROJECT FUNDING**

Funds will be made available for reservations on a first-come, first-served basis, until annual funding is reserved. Reservations which are rejected as a result of insufficient funds will be placed on a waiting list and offered the opportunity to retain their original reservation date for one additional quarter without the need to resubmit application documentation. If the incentive level has changed from the date of the original reservation to the date when the reservation is approved, the new incentive level shall be applied.

### **PROJECT REQUIREMENTS AFTER INSTALLATION**

After completing the installation of a small distributed energy system, the customer must continue to provide information to UNS Electric about the system’s performance.

All customers receiving renewable energy self-generation incentives are obligated to report system production to UNS Electric in accordance with the reporting schedule established in the program agreement between UNS Electric and the customer. UNS Electric, at its option, may perform periodic inspection of the system for operation, metered production, and reporting purposes.

## **THE FINE PRINT**

In addition to the other requirements described in this hand book, there are two other types of program details of which system owners and installers should be aware:

1. Installer qualifications
2. System removal

These are described in further detail below.

### **Installer Qualifications**

All systems receiving incentives under the RECPP must be installed by a qualified installer. The following requirements must be submitted by the applicant as part of the reservation request. UNS Electric will verify that the installer meets the following minimum qualifications prior to confirming a reservation request:

1. The installer must possess a valid license on file with the Arizona Registrar of Contractors ("AZROC") with a license classification appropriate for the technology being installed. Alternatively, the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. A copy of the AZROC license must be provided as part of the reservation request.
2. The installer must possess an Arizona business license that is active and in good standing.

Installers may request that the above information be retained on file with UNS Electric; however, under this option the installer must certify that the information on file remains current with the submission of each reservation request. Information on file must be renewed yearly.

### **System Removal**

If receiving a UFI, neither the Qualifying System nor any components thereof shall be removed from the premises (by either the applicant or future owners or occupants of the property) until December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year following completion of system installation of the renewable energy system, without express agreement of UNS Electric. If the Qualifying System is removed by any party in violation of this provision, customer shall immediately reimburse UNS Electric all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that an additional incentive is not provided for any new distributed renewable energy resource system on that site until the REC contracted operational life of the original system has been completed.

UNS Electric shall attempt to monitor the number of missing or non-working distributed generation systems and shall summarize its observations in its annual Compliance Report.

**ATTACHMENT A**

**QUALIFICATIONS FOR RESIDENTIAL AND COMMERCIAL GROUND SOURCE HEAT PUMP SYSTEMS**

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement which is in conflict with a site-specific governmental requirement shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

Equipment Qualifications

1. Geothermal system installations involving a regulated boiler or pressure vessel are required to comply with all Arizona state boiler regulations; provide a qualifying boiler inspection identification number; and keep all applicable permits in good standing.
2. Energy savings and designed output for the system will be verified by submitting either a testing certification for a substantially similar system prepared by a publicly-funded laboratory or by submitting an engineering report stamped by a registered third-party professional engineer. The engineering report shall provide a description of the system and major components, design criteria and performance expectations, applicable standards and/or codes, and a brief history of components in similar applications.
3. Energy production for space heating, space cooling and process heating will be calculated as one kWh of energy per 3,415 Btu of useful heat delivered by the system as measured by a dedicated heat delivery measuring meter and used by the building space or process.
4. The system will have a material and labor warranty of at least five years.
5. The system must meet Arizona DEQ environmental standards.
6. The most current Energy Star Standards must be achieved. These can be found at <http://www.energystar.gov/index.cfm?c=geoheat.prcritgeoheatpumps>.

Installation Guidance

Because of the individual nature of geothermal systems, care should be taken to make sure the system complies with all applicable permitting and regulatory requirements including, but not limited to, air emission standards and air permit regulations.

General Requirements

1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.

## Ground Source Heat Pumps: Residential and Commercial

3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment.

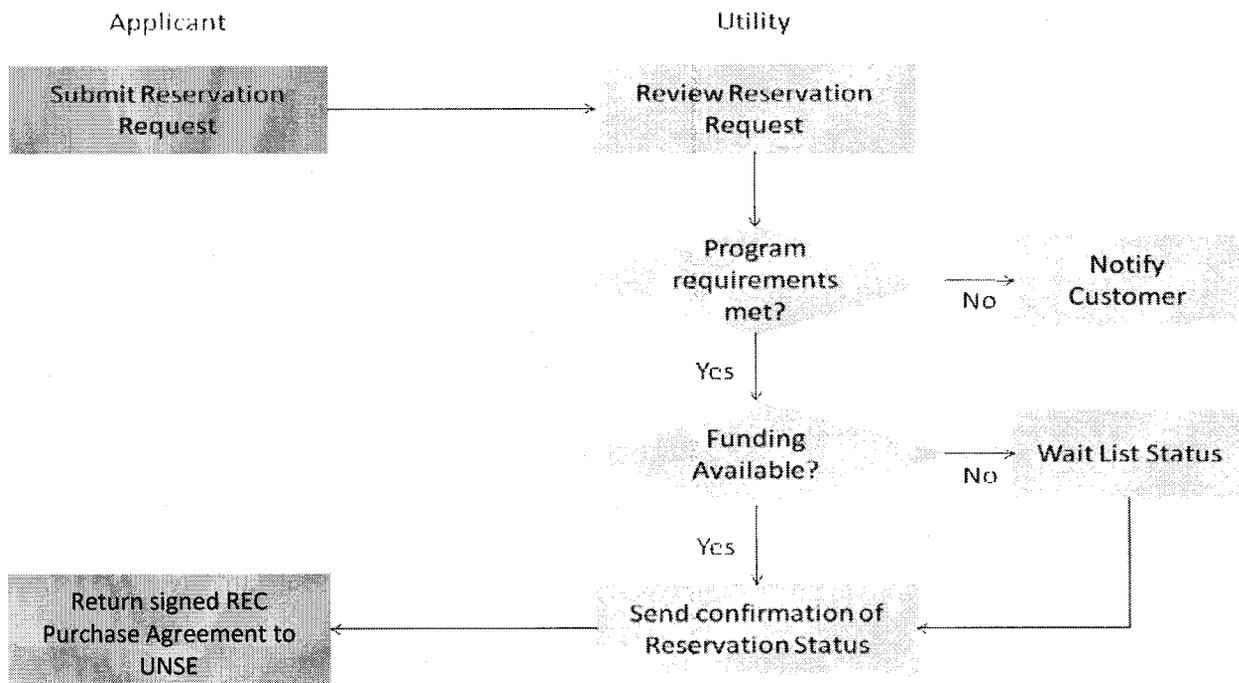
## Wind Systems Smaller Than 1 MW

UNS Electric (“UNS Electric” or the “Company”) is committed to assisting our customers in developing their own renewable generation resources, through a balanced and supportive renewable energy distributed generation incentive program. Our goal is to create a program that will provide incentives for affordable, environmentally sensitive, customer-sited renewable energy generation systems to supplement UNS Electric customer’s energy needs. A properly designed system, matched to a customer’s energy use, will provide a reduction in utility bills through the use of renewable resources. This program reflects our commitment to reduce the cost of developing renewable energy resources.

### PROCESS FOR OBTAINING INCENTIVES

The process for obtaining incentives from UNS Electric involves the flow of information between the applicant and UNS Electric. The following sections reflect the typical three-step process.

#### Step 1 – Reservation Request and Assignment of Reservation Status



The applicant must first submit the reservation request to UNS Electric. The reservation request includes information about the UNS Electric customer on whose property the system will be located, the wind system, the calculation of the incentive, and the installer of the system.

UNS Electric will review the reservation request to ensure the application conforms to program requirements.

- Reservation requests for small wind systems are processed on a first-come, first-served basis.
- Reservation requests for small wind systems will be reviewed within 30 days of the utility’s receipt of the request.

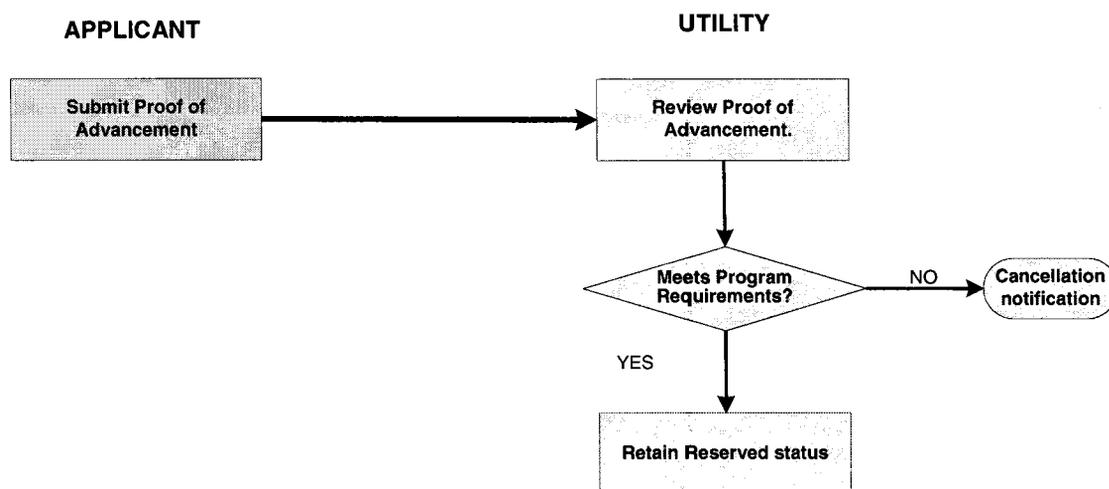
## Wind Systems Smaller Than 1 MW

If the reservation request is approved, UNS Electric will send a confirmation to the applicant. A reservation request may be denied for two different reasons, each with its own consequences:

- The reservation request may be denied because it is not in conformance with program requirements. In this case, UNS Electric will send notice that the request is cancelled.
- The reservation request may be denied because funding is not available. In this case, UNS Electric will send a notification to the applicant that the request will be placed on a waiting list.

After reviewing the reservation request, UNS Electric will assign a reservation status.

### Step 2 – Proof of Advancement



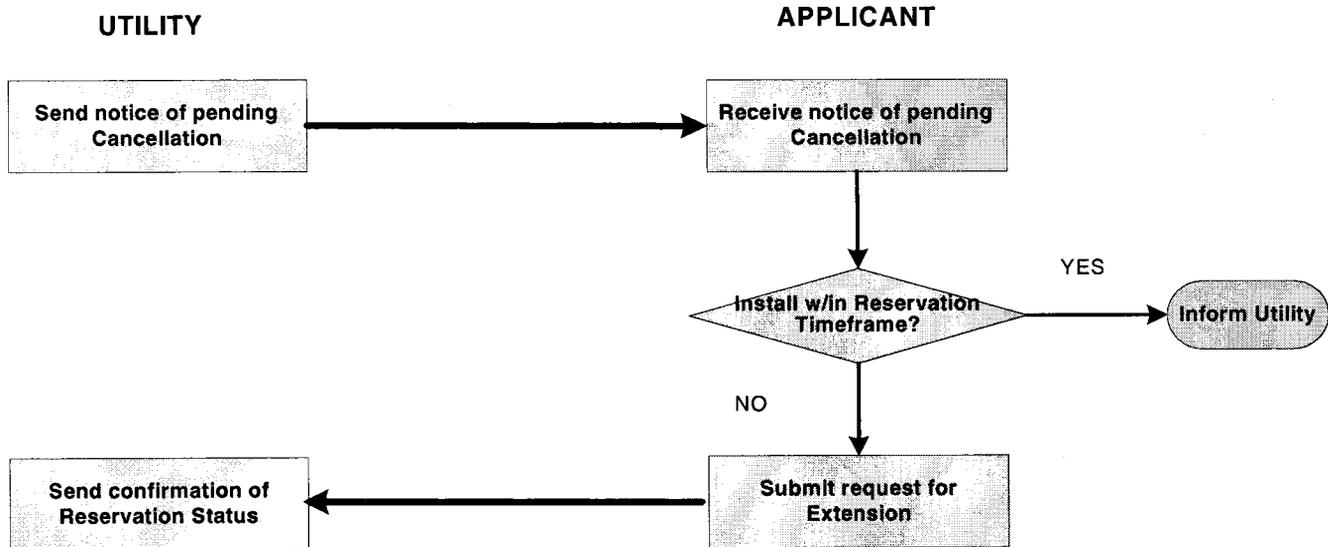
Applicants for wind systems smaller than 1 MW must submit proof of project advancement to UNS Electric within 60 days of the date of reservation confirmation from UNS Electric to retain the reservation. Applicants for wind systems smaller than 1 MW must provide copies of city/county inspection permits to UNS Electric as documentation of the proof of project advancement. If those permits are not available within 60 days of the date of reservation confirmation, the applicant may also provide these documents in place of the permits:

- Signed agreement
- Assignment of Payment form
- Initial city/county permit application or actual receipt of final acceptance inspection paperwork from the city/county.

If proof of project advancement is not received within the specified timeframe, the applicant will be notified that the reservation is cancelled. The applicant has the option to reapply for funding after the reservation has been cancelled. The request will be processed in the same manner as a new project reservation and will be contingent upon availability of funding at the time the new application is received.

## Wind Systems Smaller Than 1 MW

### Conditional Step – Extension / Cancellation

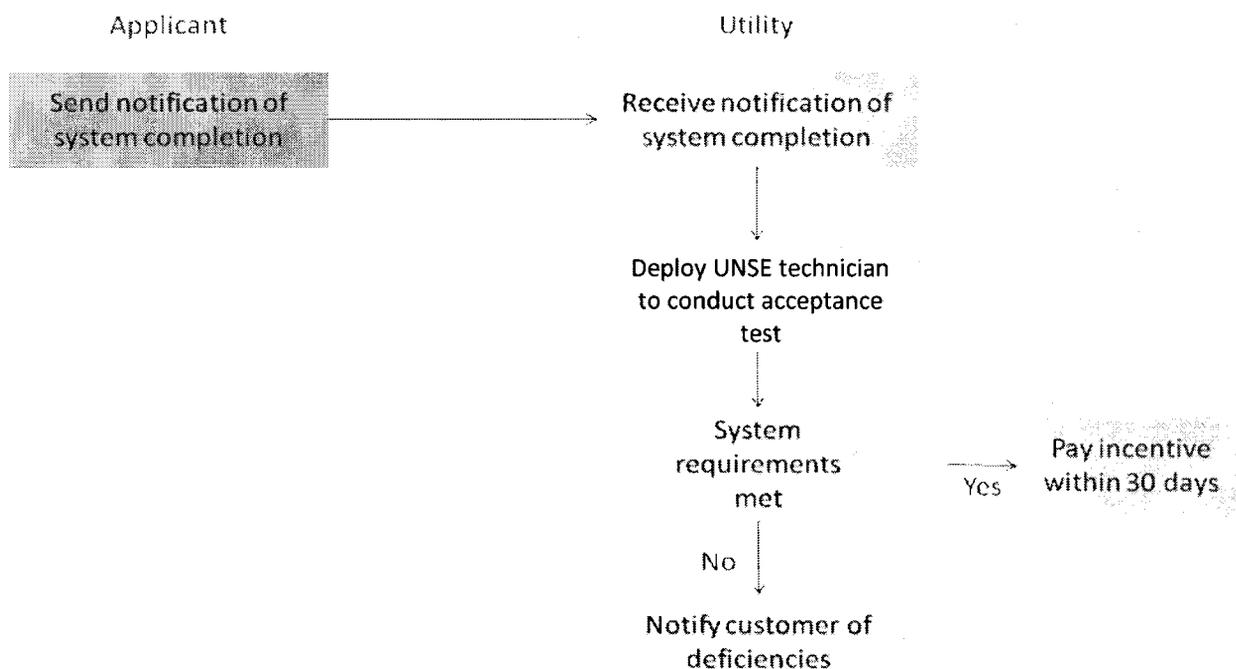


If all project requirements are not met within 180 days of the date of the reservation confirmation, the applicant must apply for an extension to remain eligible for the incentive. UNS Electric will trigger this request for extension with a notice of the pending cancellation 30 days prior to the date of scheduled cancellation. UNS Electric will grant an extension for up to 90 days following timely receipt of a customer's request for extension. UNS Electric may approve written extension requests detailing the conditions for delay for periods beyond 90 days under extenuating circumstances.

If all program requirements have not been met within the reservation timeframe, a reservation request will be cancelled unless an extension is granted.

## Wind Systems Smaller Than 1 MW

### Step 3 – Customer Requests Payment



Upon project completion, the customer must notify UNS Electric that the system has been placed in service. This should be done in by submitting a copy of the city/county final inspection permit. When UNS Electric receives notification that the system is complete, UNS Electric will perform an “acceptance test.” The acceptance test requires that a UNS Electric inspector test the system’s compliance with the required specifications and its performance and determine that it is in line with UNS Electric requirements.

If the system meets UNS Electric specifications and performance requirements, UNS Electric will pay the customer the UFI within 30 days of the acceptance test. If the system fails to meet UNS Electric specifications and performance requirements, UNS Electric will notify the customer within 5 days of the acceptance test. The customer will then have 30 days to address the deficiencies and notify UNS Electric that the system is ready to be retested.

### INCENTIVE LEVELS FOR SMALL WIND SYSTEMS

Wind systems smaller than 1 MW are eligible for up-front incentives (“UFIs”). UFIs are those incentives where the customer receives a one-time payment based on the system’s designed capacity. Table 6 identifies the incentives available for wind systems smaller than 1 MW.

**Table 6. Up-Front Incentives for Small Wind Systems**

	On-Grid Incentive Level	Off-Grid Incentive Level
2010	\$2.25/W AC	\$1.80/W AC
2011*	\$2.25/W AC	\$1.80/W AC
2012*	\$2.25/W AC	\$1.80/W AC

## Wind Systems Smaller Than 1 MW

2013*	\$2.25/W AC	\$1.80/W AC
2014*	\$2.25/W AC	\$1.80/W AC

### Notes:

\*Indicates that the incentive for that year has not yet been approved by the Arizona Corporation Commission (“ACC” or the “Commission”). As such, these incentives are tentative and may change pending ACC approval.

- UNS Electric customers will receive a UFI up to a cap of 1 MW. If a system is installed larger than 1 MW, it must apply under the utility-scale program.
- The UFI may not exceed 60% of total System Cost.
- The customer must pay at least 15% of the project cost, after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)
- Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.

The incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation approval, the incentive amount reserved will not be changed as long as the reservation is not cancelled.

In return for UNS Electric’s payment of a UFI, UNS Electric will be given complete and irrevocable ownership of the RECs until December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year after completion of installation of the system. Operational life during that time frame must be supported by system warranty or planned maintenance schedules.

### **PROJECT FUNDING**

Funds will be made available for reservations on a first-come, first-reserved basis, until annual funding is reserved. Reservations which are rejected as a result of insufficient funds will be placed on a waiting list and offered the opportunity to retain their original reservation date for one additional quarter without the need to resubmit application documentation. If the incentive level has changed from the date of the original reservation to the date when the reservation is approved, the new incentive level shall be applied.

## **NET METERING**

All projects must comply with ACC net metering rules.

## **PROJECT REQUIREMENTS AFTER INSTALLATION**

After completing the installation of a small wind project, the customer must continue to provide information to UNS Electric about the system's performance.

All customer systems receiving renewable energy self-generation incentives are obligated to include a UNS Electric-supplied production meter, which will report system production to UNS Electric in accordance with the regular meter-reading schedule. UNS Electric, at its option, may perform periodic inspection of the system for operation, metered production, and reporting purposes.

## **THE FINE PRINT**

In addition to the other requirements described in this hand book, there are three other types of program details of which system owners and installers should be aware:

1. Installer qualifications
2. Customer-installed systems
3. System removal

These are described in further detail below.

### **Installer Qualifications**

All systems receiving incentives under the RECPP must be installed by a qualified installer. The following requirements must be submitted by the applicant as part of the reservation request. UNS Electric will verify that the installer meets the following minimum qualifications prior to confirming a reservation request:

1. The installer must possess a valid license on file with the Arizona Registrar of Contractors ("AZROC") with a license classification appropriate for the technology being installed. Alternatively, the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. A copy of the AZROC license must be provided as part of the reservation request.
2. The installer must possess an Arizona business license that is active and in good standing.

Installers may request that the above information be retained on file with UNS Electric; however, under this option the installer must certify that the information on file remains current with the submission of each reservation request. Information on file must be renewed yearly.

## Wind Systems Smaller Than 1 MW

### **Installations by Customer (Residential Photovoltaic and Wind Only)**

Residential customers may self-install Solar Electric systems 10 kWac or smaller providing they adhere to all applicable codes and standards. The customer-installed systems are eligible for an incentive equal to 70% of the standard UFI, as otherwise listed in the incentive table above. UNS Electric reserves the right to withdraw this self-install qualification condition at any time in the future if UNS Electric finds self-installations are not adhering to the applicable codes and standards or are found to be of poor quality workmanship.

### **System Removal**

If receiving a UFI, neither the Qualifying System nor any components thereof shall be removed from the premises (by either the applicant or future owners or occupants of the property) until December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year following completion of system installation of the renewable energy system, without express agreement of UNS Electric. If the Qualifying System is removed by any party in violation of this provision, customer shall immediately reimburse UNS Electric all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that an additional incentive is not provided for any new distributed renewable energy resource system on that site until the REC contracted operational life of the original system has been completed.

UNS Electric shall attempt to monitor the number of missing or non-working distributed generation systems and shall summarize its observations in its annual Compliance Report.

## Wind Systems Smaller Than 1 MW

### Attachment A Qualifications for Wind Systems Smaller Than 1 MW

A small wind generator is a system with a nameplate capacity rating of one MW or less. The technology criteria described below are intended for small wind generators with a nameplate rating of 100 kW or less. Larger systems will be required to submit a detailed package describing site selection, energy production modeling, and an engineered system design and installation report.

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement which is in conflict with a site-specific governmental requirement shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

#### Equipment Qualifications

1. Eligible small wind systems must be certified and nameplate rated by the Consumer Energy Center ("CEC")<sup>6</sup>. See [www.consumerenergycenter.org/erprebate/equipment.html](http://www.consumerenergycenter.org/erprebate/equipment.html) for a list of certified generators. For grid tied or off-grid wind generators where an inverter is used, the CEC listed nameplate rating of the wind generator will be multiplied by the CEC approved weighted efficiency percentage listed for the inverter in the "List of Eligible Inverters" at [www.consumerenergycenter.org/cgi-bin/eligible\\_inverters.cgi](http://www.consumerenergycenter.org/cgi-bin/eligible_inverters.cgi) to calculate the wind turbine nameplate rating for use in determining the UFI payment.<sup>7</sup>
2. Grid connected inverters used as part of the system shall carry a UL listing certifying full compliance with Underwriter's Laboratory ("UL")-1741.
3. A system must include a dedicated performance meter (provided by UNS Electric) installed to allow for measurement of the amount of electricity produced.
4. The performance meter and utility disconnect for grid tied systems will be installed in a location readily accessible by UNS Electric during normal business hours.
5. Off-grid systems of capacity less than 10 kWac will not be metered. Compliance reporting production will be based on an annual 20% capacity factor.
6. The tower used in the installation must be designed by an Arizona registered engineer and must be suitable for use with the wind generator. Tower installation must be designed and supervised by individuals familiar with local geotechnical conditions.

<sup>6</sup> UNSE recommends review of the SWCC standards for rating small wind generators once they become available for purposes of supplanting the CEC requirement in this Technology Criterion.

<sup>7</sup> Inverter outputs are rated in dc Watts and must be converted to ac Watts for incentive calculation purposes.

## Wind Systems Smaller Than 1 MW

7. To receive a UFI, the wind generator and system must be covered by a manufacturer's warranty of at least 5 years. Otherwise the system will qualify for a PBI. In all cases, the wind system will have a material and labor warranty of at least five years.

### Installation Guidance

1. Location: a wind turbine hub should be at least 20 feet above any surrounding object and at least 28 feet above the ground within a 250-foot radius. Wind generators should be installed in locations with an elevation at or above the general elevation of the surrounding terrain.
2. Lot Size: should be one-half acre at minimum. Municipalities and public facilities such as schools and libraries are exempt from the minimum lot size requirements.

### General Requirements

1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.
3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. Wind system components shall be properly labeled, including AC & DC disconnects (if present), wind generation meter, service panel (outside cover), and breakers inside the service panel.
8. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment.  
See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.

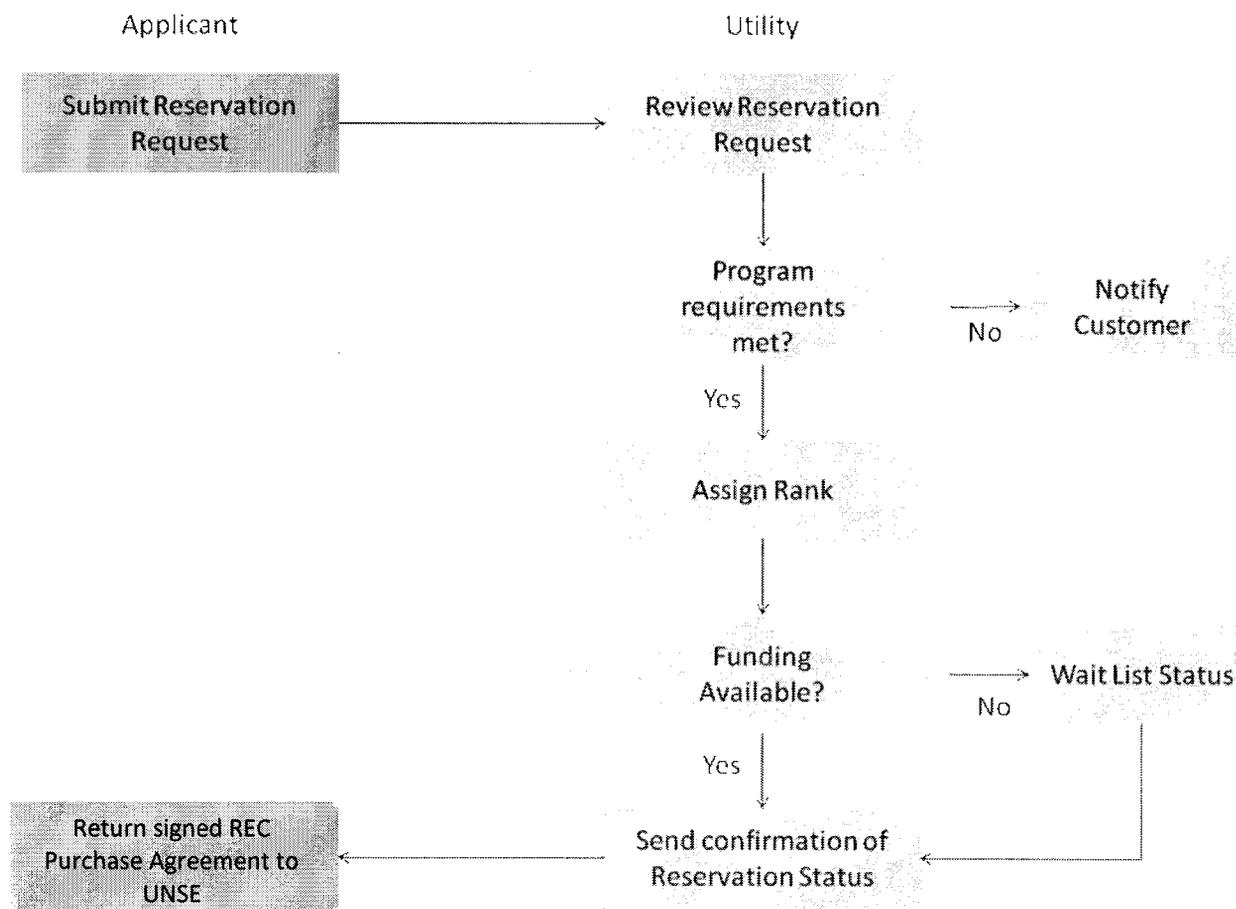
## Non-Residential Solar Daylighting

UNS Electric (“UNS Electric” or the “Company”) is committed to assisting our customers in developing their own renewable generation resources, through a balanced and supportive renewable energy distributed generation incentive program. Our goal is to create a program that will provide incentives for affordable, environmentally sensitive, customer-sited renewable energy generation systems to supplement UNS Electric customer’s energy needs. A properly designed system, matched to a customer’s energy use, will provide a reduction in utility bills through the use of renewable resources. This program reflects our commitment to reduce the cost of developing renewable energy resources.

### PROCESS FOR OBTAINING INCENTIVES

The process for obtaining incentives from UNS Electric involves the flow of information between the applicant and UNS Electric. The following sections reflect the typical five-step process.

#### Step 1 – Reservation Request and Assignment of Reservation Status



## Non-Residential Solar Daylighting

The applicant must first submit the reservation request to UNS Electric. The reservation request includes information about the UNS Electric customer on whose property the system will be located, the system itself, the calculation of the incentive, and the installer of the system.

UNS Electric will review the reservation request within 90 days of receipt of the request to ensure the application conforms to program requirements.

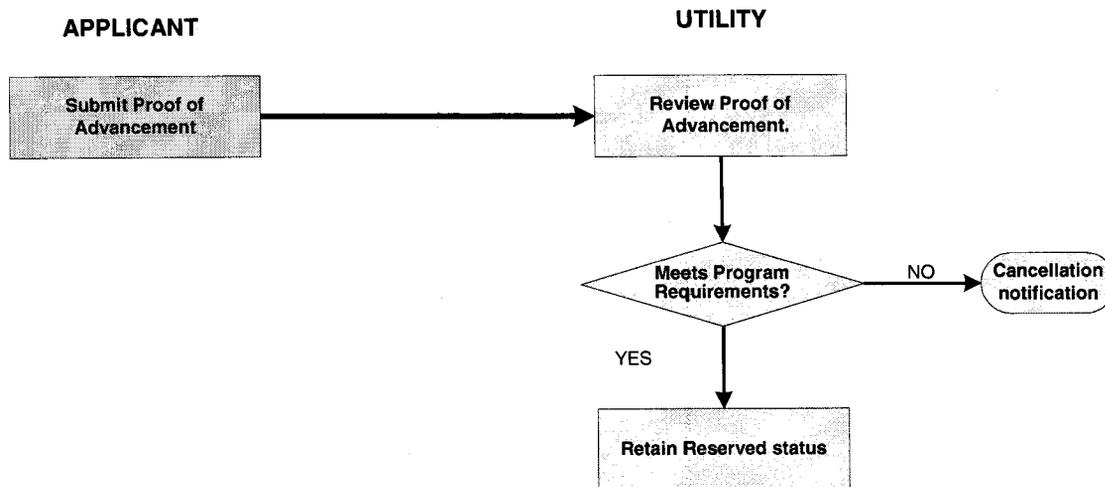
- Reservation requests for non-residential solar daylighting are assigned a rank based on the lowest expected life cycle credit purchase cost.
- In the event of a tie in the ranking, when the program would be fully subscribed if both projects were given reservation status, funds will be awarded based on the date of receipt of the completed reservation request.

If the reservation request is approved, UNS Electric will send a confirmation to the applicant. A reservation request may be denied for two different reasons, each with its own consequences:

- The reservation request may be denied because it is not in conformance with program requirements. In this case, UNS Electric will send notice that the request is cancelled.
- The reservation request may be denied because funding is not available. In this case, UNS Electric will send a notification to the applicant that the request will be placed on a waiting list.

After reviewing the reservation request, UNS Electric will assign a reservation status.

### Step 2 – Proof of Advancement



Applicants for non-residential solar daylighting must submit proof of project advancement to UNS Electric within 120 days of the date of reservation confirmation from UNS Electric to retain the reservation. At a minimum, the Proof of Project Advancement documentation for a non-residential solar daylighting system will include the following:

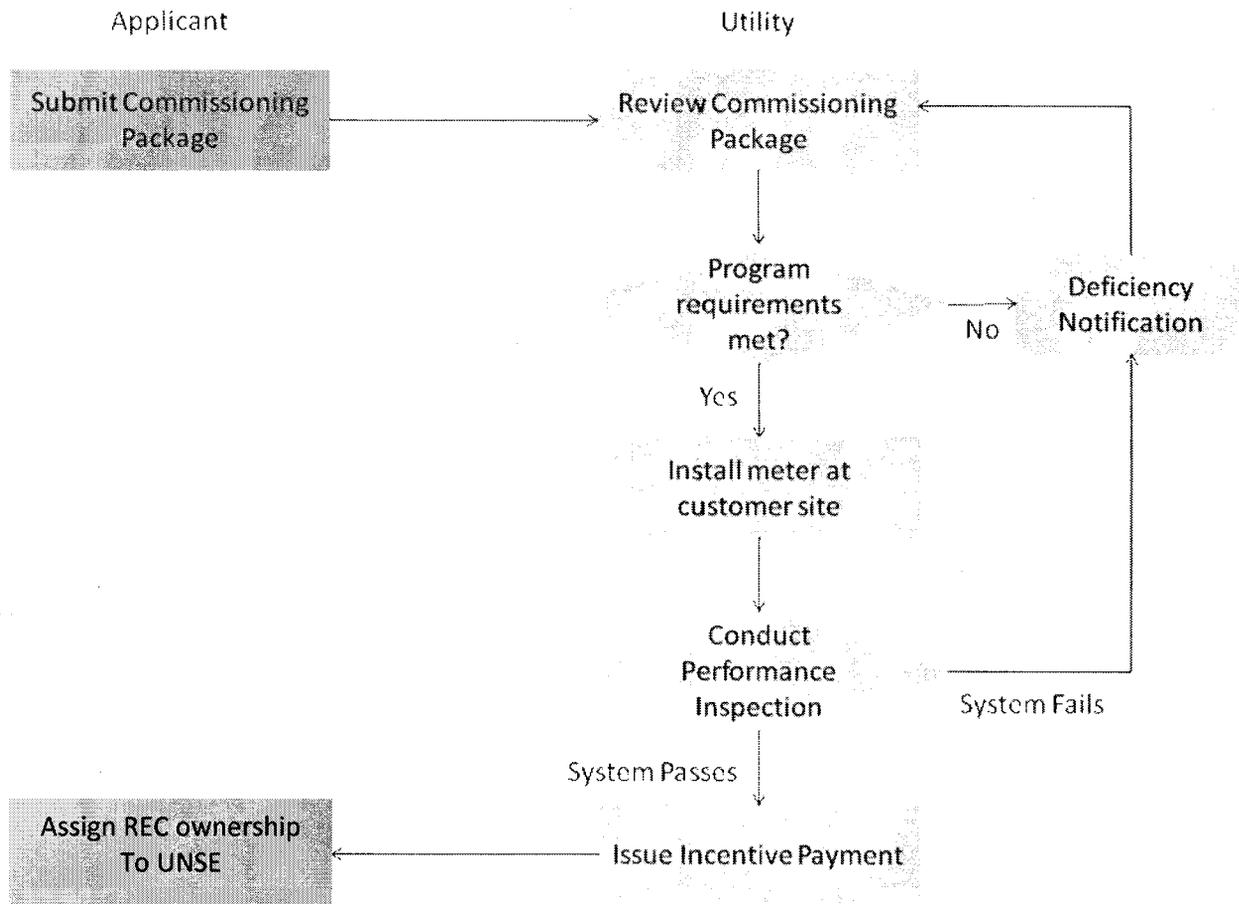
- A project agreement (between customer and installer);
- An executed installation agreement including all project participants;

## Non-Residential Solar Daylighting

- Building and/or construction permits and/or a full set of design development or construction drawings (80% or more complete); and

If proof of project advancement is not received within the specified timeframe, the customer will be notified that the reservation is cancelled. The applicant has the option to reapply for funding after the reservation has been cancelled. The request will be processed in the same manner as a new project reservation and will be contingent upon availability of funding at the time the new application is received.

### Step 3 – System Commissioning



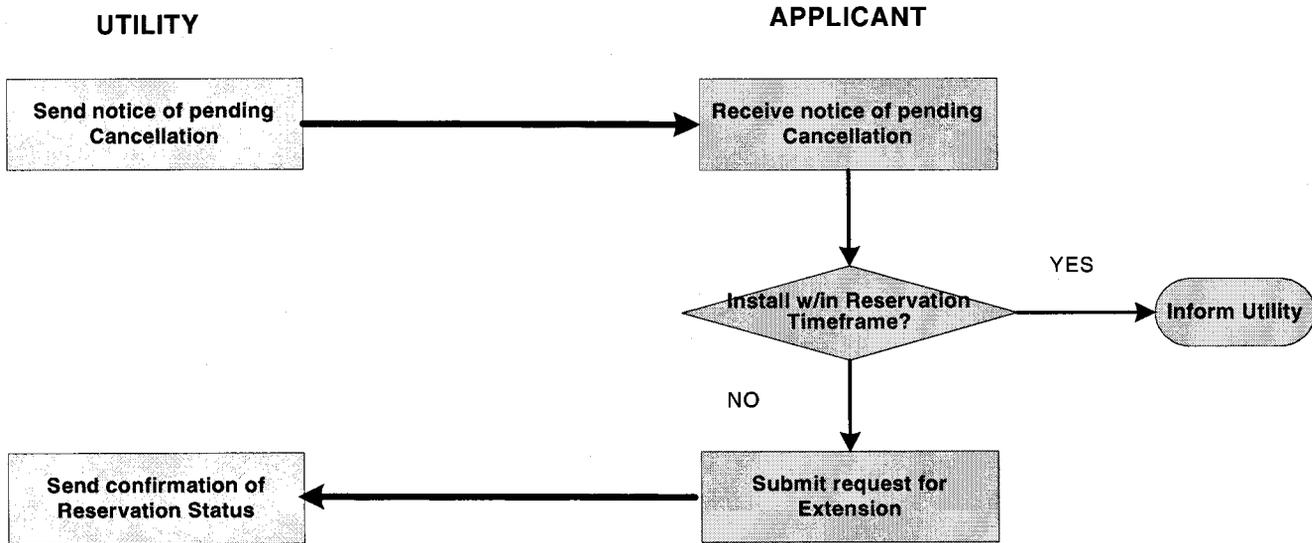
After the non-residential solar daylighting system has been commissioned, the applicant must submit a commissioning package to UNS Electric. UNS Electric will review the commissioning package and confirm that all program requirements have been met, including passing the interconnection inspection.

After receiving the commissioning package, UNS Electric will dispatch a UNS Electric representative to install the meter at the system site. The meter will be certified according to the UNS Electric standards. The customer must provide access to the site during normal business hours so that the UNS Electric representative can install the meter.

## Non-Residential Solar Daylighting

In addition, UNS Electric may, at its discretion, perform a conformance inspection of the system. UNS Electric will notify the applicant of the scheduled conformance inspection and the applicant must make the system available for inspection. In most cases in which a conformance inspection is conducted, an incentive payment may not be issued until after a qualifying system has passed the conformance inspection.

### Conditional Step – Extension / Cancellation



If all project requirements are not met within 365 days of the date of the reservation confirmation, the applicant must apply for an extension to remain eligible for the incentive. UNS Electric will trigger this request for extension with a notice of the pending cancellation 60 days prior to the date of scheduled cancellation. UNS Electric will grant an extension for up to 90 days following timely receipt of a customer's request for extension. UNS Electric may approve written extension requests detailing the conditions for delay for periods beyond 90 days under extenuating circumstances.

If all program requirements have not been met within the reservation timeframe, a reservation request will be cancelled unless an extension is granted.

## Non-Residential Solar Daylighting

### **Step 4 – Incentive Payment is Disbursed**

Non-residential daylighting systems are eligible for a performance-based incentive (“PBI”). All PBI Project Agreements will include the following terms:

1. A project agreement between the applicant(s) and UNS Electric that details the assignment of energy and RECs and the assignment of payment must be completed before payments can be disbursed.
2. Quarterly meter reads will be performed by UNS Electric and quarterly payments will be made to the assigned payee within 30 days of the meter reading based on quarterly kWh production. If the payment due is less than \$25.00, it will be held for the next payment period.
3. PBI payments will begin with the first quarterly production following receipt of the completed system commissioning package and conformance inspection, if required, and continue for the life of the agreement term. As part of this provision, it is understood that systems commissioned mid-quarter will receive payment only for the production of that partial quarter.

UNS Electric’s payment of a PBI will assure UNS Electric complete and irrevocable ownership of the REC for the full duration of the PBI agreement. The agreement duration must fully coincide with the PBI payment schedule and the system must be supported by system warranty or planned maintenance schedules for the term of the agreement.

### **INCENTIVE LEVELS FOR NON-RESIDENTIAL SOLAR DAYLIGHTING SYSTEMS**

Non-residential solar daylighting systems are eligible for performance-based incentives (“PBIs”). The PBI allows the customer to collect incentive payments in direct relation to the actual system production.

## Non-Residential Solar Daylighting

Table 7 identifies the incentives available for non-residential daylighting systems.

In all cases, incentive values listed in Table 7 are maximum values. PBIs are awarded through a bid process, which is discussed later in this section. Applicants are encouraged to submit bids requesting incentive amounts less than the maximums listed. Bids requesting a lower level of incentive payment than the maximum will have an increased chance of acceptance in the allocation ranking process.

## Non-Residential Solar Daylighting

**Table 7. Up-Front Incentives for Non-Residential Daylighting Systems**

Year	Incentive Level
2010	\$0.18/kWh savings during first five years
2011*	\$0.18/kWh savings during first five years
2012*	\$0.18/kWh savings during first five years
2013*	\$0.18/kWh savings during first five years
2014*	\$0.18/kWh savings during first five years

Notes:

\*Indicates that the incentive for that year has not yet been approved by the Arizona Corporation Commission (“ACC” or the “Commission”). As such, these incentives are tentative and may change pending ACC approval.

- The per-kWh incentive applies only to energy savings realized during the first five years of project operation. The incentive is paid out over the five-year period.
- The UFI may not exceed 60% of total System Cost.
- The customer must pay at least 15% of the project cost, after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)
- Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.
- As described later in this document, these incentive levels may be decreased because of sub-optimal system positioning.

The incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation approval, the incentive amount reserved will not be changed as long as the reservation is not cancelled.

In return for UNS Electric’s payment of a UFI, UNS Electric will be given complete and irrevocable ownership of the RECs until December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year after completion of installation of the system. Operational life during that time frame must be supported by system warranty or planned maintenance schedules.

### PROJECT FUNDING

Funds will be made available for reservations on a first-come, first-reserved basis, until annual funding is reserved. Reservations which are rejected as a result of insufficient funds will be placed on a waiting list and offered the opportunity to retain their original reservation date for one additional quarter without the need to resubmit application documentation. If the incentive level has changed from the date of the original reservation to the date when the reservation is approved, the new incentive level shall be applied.

Funds unused in one period will be equally divided among the remaining periods in that year. Funds allocated to non-residential projects will not roll forward from one year to the next. Reservations which are rejected as a result of insufficient program funds may elect to carry forward into the next period and retain the original reservation date. The election must be made at the time of the original application.

## **THE FINE PRINT**

In addition to the other requirements described in this hand book, there are two other types of program details of which system owners and installers should be aware:

1. Installer qualifications
2. System removal

These are described in further detail below.

### **Installer Qualifications**

All systems receiving incentives under the RECPP must be installed by a qualified installer. The following requirements must be submitted by the applicant as part of the reservation request. UNS Electric will verify that the installer meets the following minimum qualifications prior to confirming a reservation request:

1. The installer must possess a valid license on file with the Arizona Registrar of Contractors ("AZROC") with a license classification appropriate for the technology being installed. Alternatively, the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. A copy of the AZROC license must be provided as part of the reservation request.
2. The installer must possess an Arizona business license that is active and in good standing.

Installers may request that the above information be retained on file with UNS Electric; however, under this option the installer must certify that the information on file remains current with the submission of each reservation request. Information on file must be renewed yearly.

### **System Removal**

If receiving a PBI, the Qualifying System or any components thereof shall not be removed from the premises until the last day of the final month of the final full calendar year of the applicable incentive payment term in the Agreement following completion of system installation of the renewable energy system, without express agreement from UNS Electric. If the Qualifying System is removed in violation of this provision, customer shall immediately reimburse UNS Electric all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that an additional incentive is not provided for any new distributed renewable energy resource system on that site until the REC contracted operational life of the original system has been completed.

UNS Electric shall attempt to monitor the number of missing or non-working distributed generation systems and shall summarize its observations in its annual Compliance Report.

## Non-Residential Solar Daylighting

### **Attachment A Qualifications for Non-Residential Solar Daylighting**

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement which is in conflict with a site-specific governmental requirement shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

#### Equipment Qualifications

All systems shall include the following components as part of the day lighting system:

1. Skylights must adhere to the 2009 International Energy Conservation Code with regard to the U-factor and solar heat gain coefficient and must have a minimum visible transmittance based on the CPUC Savings by Design program (Note: U-value and SHGC ratings should be based on a 20 degree ratings, now standard through the NFRC)
  - o Maximum U-factor of 0.75
  - o Maximum solar heat gain coefficient of 0.35
  - o Minimum visible transmittance of 0.45
2. Skylight can be in a toplighting configuration only
3. Skylight area may not exceed 3% of the gross roof area
4. Skylights must be certified by the National Fenestration Rating Council (NFRC)
5. If artificial lighting systems remain a part of the installation, the system shall include automated lighting control(s) which are programmed to keep electric lights off/dimmed during daylight hours of sufficient solar insolation to provide minimum design illumination levels.
6. The system will have a material and labor warranty of at least five years.

#### Installation Guidance

All systems should be installed such that the skylight dome is substantially unshaded and have substantially unobstructed exposure to direct sunlight between the hours of 9:00 a.m. and 3:00 p.m.

#### General Qualifications

1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.
3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.

## Non-Residential Solar Daylighting

4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment. See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.

## Additional Technologies with Prescriptive Incentives:

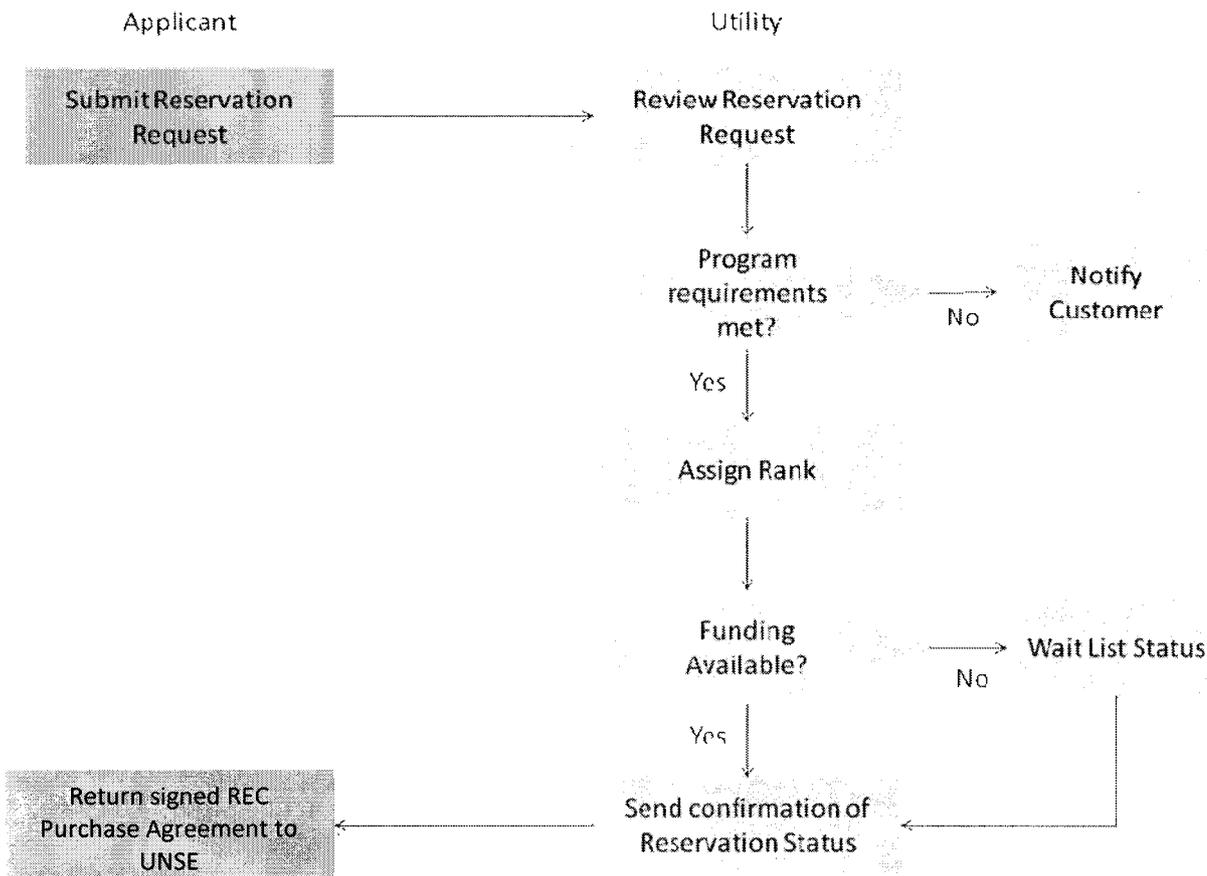
- (1) Biomass/Biogas or Geothermal Space Heating, Process Heating, or Space Cooling: Non-Residential
- (2) Biomass/Biogas, Hydro or Geothermal Electric
- (3) Solar Space Cooling

UNS Electric (“UNS Electric” or the “Company”) is committed to assisting our customers in developing their own renewable generation resources, through a balanced and supportive renewable energy distributed generation incentive program. Our goal is to create a program that will provide incentives for affordable, environmentally sensitive, customer-sited renewable energy generation systems to supplement UNS Electric customer’s energy needs. A properly designed system, matched to a customer’s energy use, will provide a reduction in utility bills through the use of renewable resources. This program reflects our commitment to reduce the cost of developing renewable energy resources.

### PROCESS FOR OBTAINING INCENTIVES

The process for obtaining incentives from UNS Electric involves the flow of information between the applicant and UNS Electric. The following sections reflect the typical five-step process.

#### Step 1 – Reservation Request and Assignment of Reservation Status



## Additional Technologies with Prescriptive Incentives

The applicant must first submit the reservation request to UNS Electric.<sup>8</sup> The reservation request includes information about the UNS Electric customer on whose property the system will be located, the system, the calculation of the incentive, and the installer of the system.

UNS Electric will review the reservation request within 90 days of receipt of the request to ensure the application conforms to program requirements.

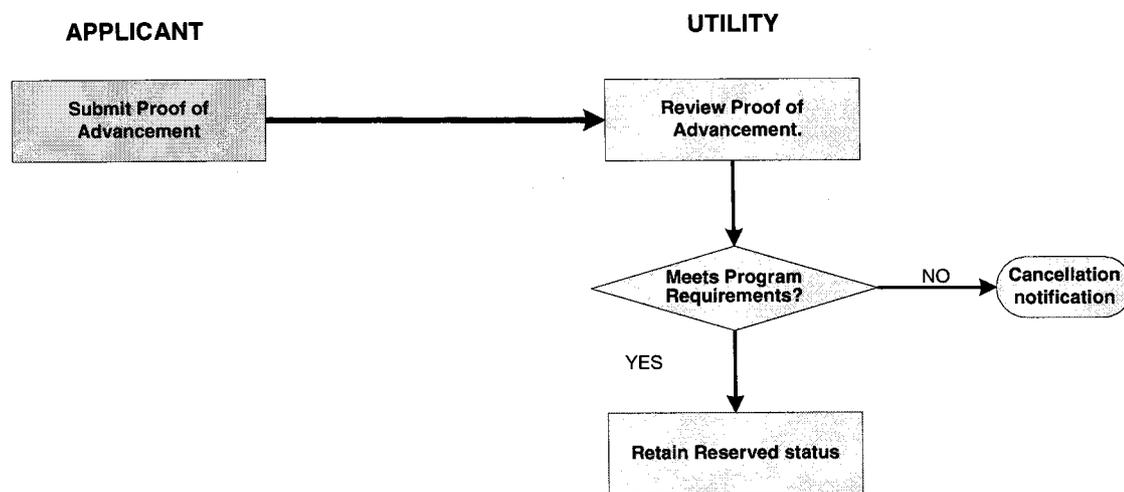
- Reservation requests for non-residential systems larger than 100 kW are assigned a rank based on the lowest expected life cycle credit purchase cost and likelihood of construction.
- In the event of a tie in the ranking, when the program would be fully subscribed if both projects were given reservation status, funds will be awarded based on the date of receipt of the completed reservation request.

If the reservation request is approved, UNS Electric will send a confirmation to the applicant. A reservation request may be denied for two different reasons, each with its own consequences:

- The reservation request may be denied because it is not in conformance with program requirements. In this case, UNS Electric will send notice that the request is cancelled.
- The reservation request may be denied because funding is not available. In this case, UNS Electric will send a notification to the applicant that the request will be placed on a waiting list.

After reviewing the reservation request, UNS Electric will assign a reservation status.

### Step 2 – Proof of Advancement



Applicants for non-residential systems larger than 100 kW must submit proof of project advancement to UNS Electric within 120 days of the date of reservation confirmation from UNS Electric to retain the reservation. The Proof of Project Advancement documentation for a non-residential project larger than 100 kW may include the following:

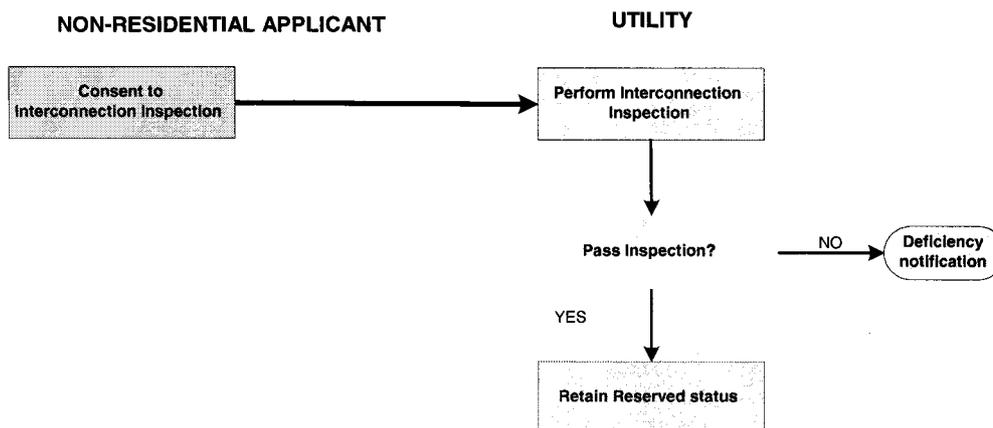
<sup>8</sup> Applicants with off-grid projects would submit a different version of the reservation request.

## Additional Technologies with Prescriptive Incentives

- A project agreement (between customer and installer);
- An executed installation agreement including all project participants;
- Building and/or construction permits and/or a full set of design development or construction drawings (80% or more complete); and
- An executed interconnection agreement (if applicable).
- A letter from customer committing to utility-accepted in-service date.

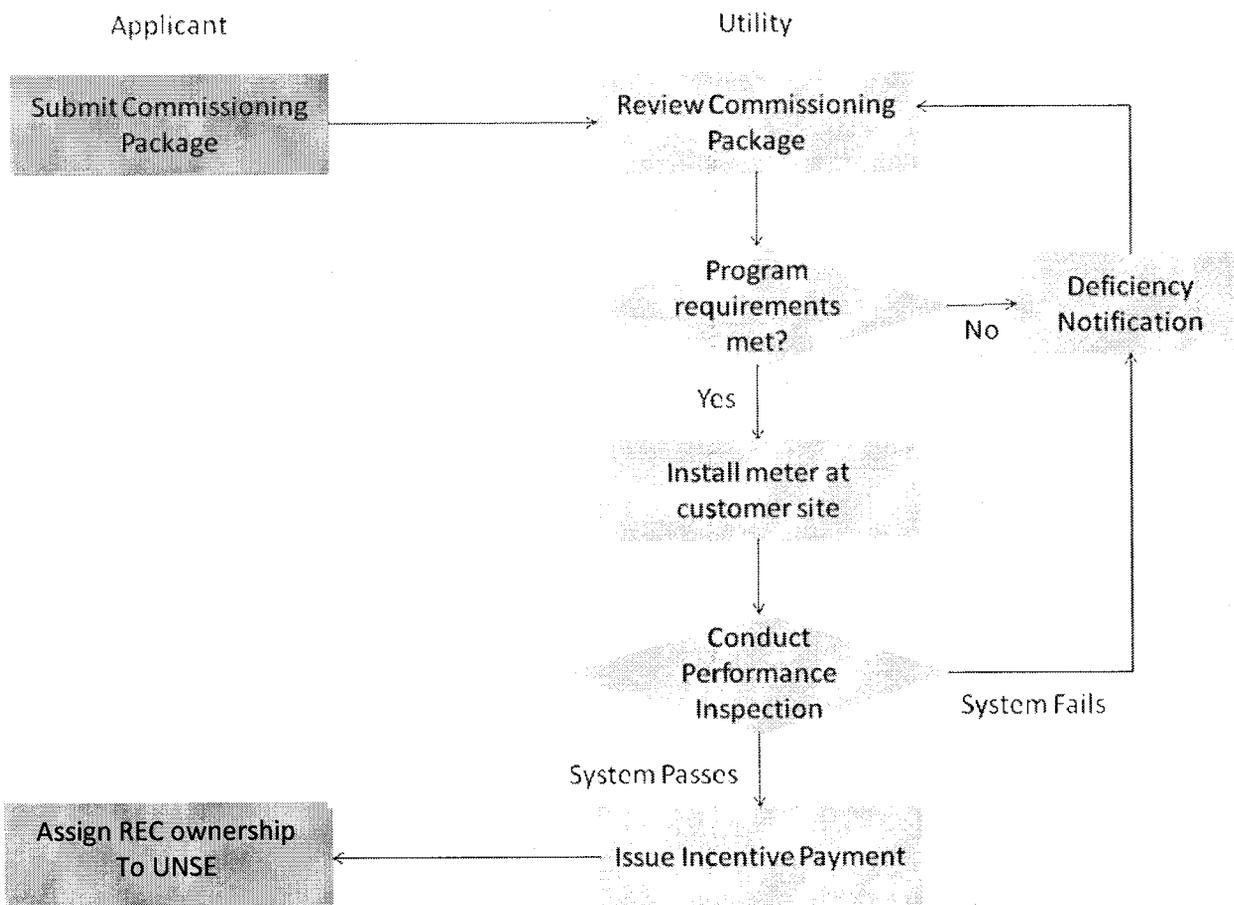
If proof of project advancement is not received within the specified timeframe, the customer will be notified that the reservation is cancelled. An appropriate written request for an extension may be requested if circumstances require. The applicant has the option to reapply for funding after the reservation has been cancelled. The request will be processed in the same manner as a new project reservation and will be contingent upon availability of funding at the time the new application is received.

### Step 3 – Interconnection Inspection (for Grid-Tied Qualifying Systems with capacity larger than 100 kW)



Non-residential grid-tied qualifying systems of electrical generating capacity larger than 100 kW must submit to and pass an interconnection inspection before the system can be commissioned. UNS Electric conducts the interconnection inspection and will notify the applicant of the results of the inspection. If the system passes the interconnection inspection, the application retains the reservation. The applicant can keep the reservation even if the system fails the initial interconnection inspection, as long as the deficiency is remedied within 120 days from the date of the reservation confirmation, as described in Step 2.

**Step 4 – System Commissioning For Non-Residential Systems Larger Than 100 kW**

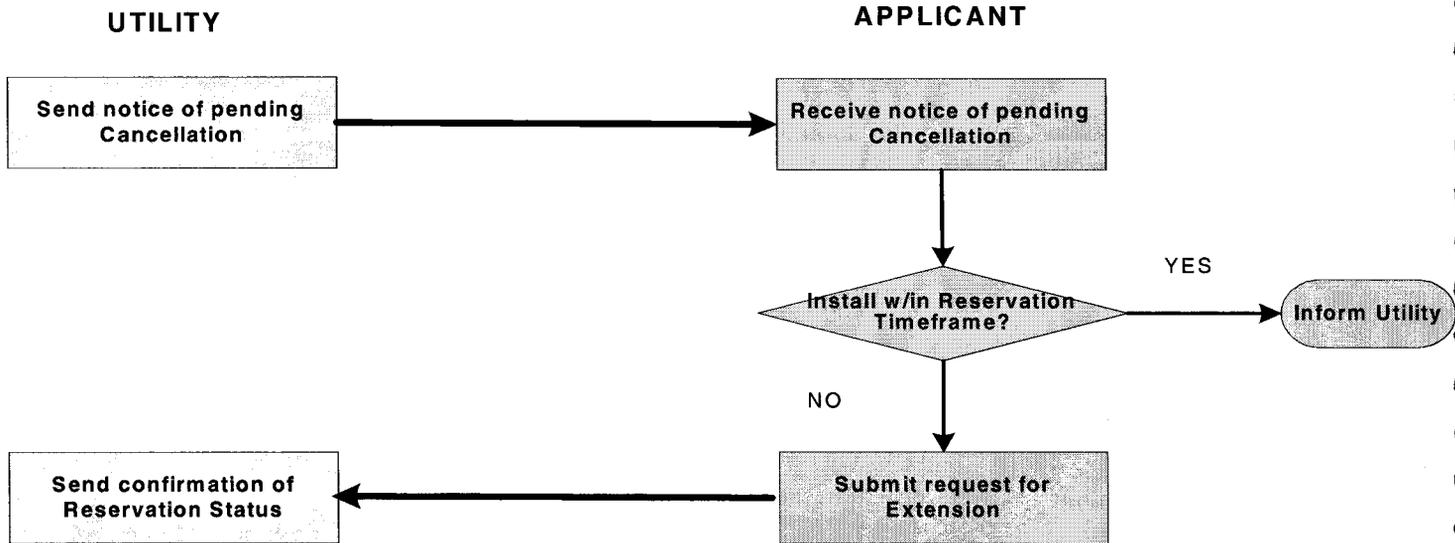


After the Non-Residential system larger than 100 kW has been commissioned, the applicant must submit a commissioning package to UNS Electric. UNS Electric will review the commissioning package and confirm that all program requirements have been met, including passing the interconnection inspection.

After receiving the commissioning package, UNS Electric will dispatch a UNS Electric representative to install the meter at the system site. The meter will be certified according to the UNS Electric standards. The customer must provide access to the site during normal business hours so that the UNS Electric representative can install the meter.

In addition, UNS Electric may, at its discretion, perform a conformance inspection of the system. UNS Electric will notify the applicant of the scheduled conformance inspection and the applicant must make the system available for inspection. In most cases in which a conformance inspection is conducted, an incentive payment may not be issued until after a qualifying system has passed the conformance inspection.

**Conditional Step – Extension / Cancellation**



If all project requirements are not met within 365 days of the date of the reservation confirmation, the applicant must apply for an extension to remain eligible for the incentive. UNS Electric will trigger this request for extension with a notice of the pending cancellation 60 days prior to the date of scheduled cancellation. UNS Electric will grant an extension for up to 90 days following timely receipt of a customer’s request for extension. UNS Electric may approve written extension requests detailing the conditions for delay for periods beyond 90 days under extenuating circumstances, or for systems larger than 1 MW.

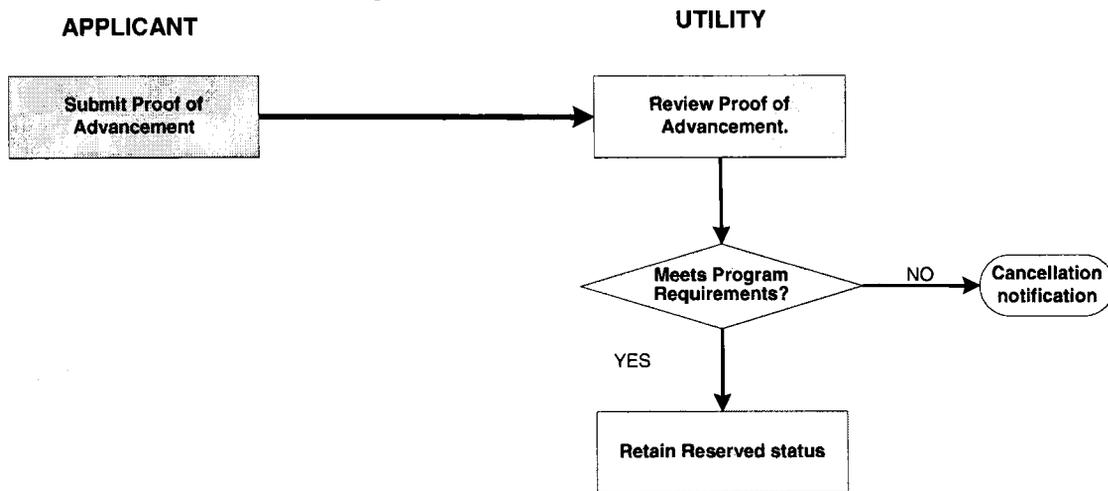
If all program requirements have not been met within the reservation timeframe, a reservation request will be cancelled unless an extension is granted.

**Step 5 – Incentive Payment is Disbursed**

Non-residential systems larger than 100 kW are eligible for a performance-based incentive (“PBI”). All PBI Project Agreements will include the following terms:

1. A project agreement between the applicant(s) and UNS Electric that details the assignment of energy and RECs and the assignment of payment must be completed before payments can be disbursed.
2. At a minimum, quarterly meter reads will be performed by UNS Electric and quarterly payments will be made to the assigned payee within 30 days of the meter reading based on quarterly kWh production. If the payment due is less than \$25.00, it will be held for the next payment period.
3. PBI payments will begin with the first quarterly production following receipt of the completed system commissioning package and conformance inspection, if required, and continue for the life of the agreement term. As part of this provision, it is understood that systems commissioned mid-quarter will receive payment only for the production of that partial quarter.

UNS Electric’s payment of a PBI will assure UNS Electric complete and irrevocable ownership of the REC for the full duration of the PBI agreement. The agreement duration must fully coincide with the PBI payment schedule and the system must be supported by system warranty or planned maintenance schedules for the term of the agreement.



**INCENTIVE LEVELS FOR ADDITIONAL TECHNOLOGIES**

The additional distributed energy technologies in residential and small commercial applications are eligible for performance-based incentives (PBIs). The PBI allows the customer to collect incentive payments in direct relation to the actual system production. These incentive levels are specific to each of the groups of technologies. Table 8 summarizes the incentive levels for these technologies for REC agreements signed in 2010 or 2011; Table 9 summarizes the incentive levels for these technologies for REC agreements signed in 2012, 2013, or 2014.

In all cases, incentive values listed in Table 8 and Table 9 are maximum values. PBIs are awarded through a bid process, which is discussed later in this section. Applicants are encouraged to submit bids

## Additional Technologies with Prescriptive Incentives

requesting incentive amounts less than the maximums listed. Bids requesting a lower level of incentive payment than the maximum will have an increased chance of acceptance in the allocation ranking process.

**Table 8. Maximum Incentives for Additional Technologies for 2010 and 2011**

Technology/Application	10-Year Agreement Signed in 2010-11* (\$/kWH)	REC	15-Year Agreement Signed in 2010-11* (\$/kWH)	REC	20-Year Agreement Signed in 2010-11* (\$/kWH)	REC
Biomass/Biogas (Electric)	\$0.060		\$0.056		\$0.054	
Biomass/Biogas – CHP (Electric) <sup>3</sup>	\$0.035		\$0.032		\$0.031	
Biomass/Biogas – CHP (Thermal) <sup>3</sup>	\$0.018		\$0.017		\$0.016	
Biomass/Biogas (thermal)	\$0.015		\$0.014		\$0.013	
Biomass/Biogas (cooling)	\$0.032		\$0.030		\$0.029	
Geothermal – (electric)	\$0.024		\$0.022		\$0.022	
Geothermal – (thermal)	\$0.048		\$0.045		\$0.043	
Small Hydro	\$0.060		\$0.056		\$0.054	
Solar Space Cooling	\$0.129		\$0.120		\$0.115	
Non-Residential Pool Heating	\$0.012		\$0.011		\$0.011	

**Notes:**

\*Indicates that the incentive for 2011 has not yet been approved by the Arizona Corporation Commission (“ACC” or the “Commission”). As such, these incentives are tentative and may change pending ACC approval.

- There is no incentive cap for non-residential systems other than annual program funding considerations.
- A PBI cannot exceed 60% of the real project costs, defined as the undiscounted total system cost plus acceptable financing charges. Acceptable finance charges are finance charges used for the PBI incentive cap calculation and cannot exceed the current prime interest rate plus 5%. Financing charges must be disclosed as part of the commissioning package, if not disclosed before.
- The customer must pay at least 15% of the project cost, after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)
- The CHP incentives may be used in combination for the appropriate components of one system.
- The solar space heating and cooling incentives may be used in combination for the appropriate components of the system.
- Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.
- The process for determining annual kWh savings for commercial solar pool heaters is this:
  1. Determine whether or not the system has an OG-100 rating. If it does not, it is not eligible for the program.
  2. If it does have an OG-100 rating, find an OG-300 rating for comparable set of collectors.
  3. Use local data to find rated annual heat production for domestic water. (This calculation assumes 300 days on which useful heat is produced.)
  4. Multiply the annual savings determined by the OG-300 rating by (180/300). This adjustment reflects the fact that pool heaters realistically only produce useful heat on 180 days each year.
  5. The result is anticipated annual kWh savings for the unit. This is multiplied by PBI level to calculate annual incentive. UNS Electric will retain the right to meter the system.

Additional Technologies with Prescriptive Incentives

**Table 9. Maximum Incentives in 2012-2014 for Additional Technologies**

Technology/Application	10-Year Agreement Signed in 2012-14* (\$/kWH)	REC	15-Year Agreement Signed in 2012-14* (\$/kWH)	REC	20-Year Agreement Signed in 2012-14* (\$/kWH)	REC
Biomass/Biogas (Electric)	\$0.060		\$0.056		\$0.054	
Biomass/Biogas – CHP (Electric) <sup>3</sup>	\$0.035		\$0.032		\$0.031	
Biomass/Biogas – CHP (Thermal) <sup>3</sup>	\$0.018		\$0.017		\$0.016	
Biomass/Biogas (thermal)	\$0.015		\$0.014		\$0.013	
Biomass/Biogas (cooling)	\$0.032		\$0.030		\$0.029	
Geothermal – (electric)	\$0.024		\$0.022		\$0.022	
Geothermal – (thermal)	\$0.048		\$0.045		\$0.043	
Small Hydro	\$0.060		\$0.056		\$0.054	
Solar Space Cooling	\$0.129		\$0.120		\$0.115	
Non-Residential Pool Heating	\$0.012		\$0.011		\$0.011	

Notes:

\*Indicates that the incentives for 2012, 2013, and 2014 have not yet been approved by the Arizona Corporation Commission (“ACC” or the “Commission”). As such, these incentives are tentative and may change pending ACC approval.

- There is no incentive cap for non-residential systems other than annual program funding considerations.
- A PBI cannot exceed 60% of the real project costs, defined as the undiscounted total system cost plus acceptable financing charges. Acceptable finance charges are finance charges used for the PBI incentive cap calculation and cannot exceed the current prime interest rate plus 5%. Financing charges must be disclosed as part of the commissioning package, if not disclosed before.
- The customer must pay at least 15% of the project cost, after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)
- The CHP incentives may be used in combination for the appropriate components of one system.
- The solar space heating and cooling incentives may be used in combination for the appropriate components of the system.
- Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.
- The process for determining annual kWh savings for commercial solar pool heaters is this:
  1. Determine whether or not the system has an OG-100 rating. If it does not, it is not eligible for the program.
  2. If it does have an OG-100 rating, find an OG-300 rating for comparable set of collectors.
  3. Use local data to find rated annual heat production for domestic water. (This calculation assumes 300 days on which useful heat is produced.)
  4. Multiply the annual savings determined by the OG-300 rating by (180/300). This adjustment reflects the fact that pool heaters realistically only produce useful heat on 180 days each year.
  5. The result is anticipated annual kWh savings for the unit. This is multiplied by PBI level to calculate annual incentive. UNS Electric will retain the right to meter the system.

## Additional Technologies with Prescriptive Incentives

System Cost for a solar space heating system will not include the cost of any passive thermal storage or the cost of the building heating system itself. It will include the cost of new materials and installation of active thermal storage, expansion tanks, controls, tempering valves, piping, vents, drains, safety valves and all freeze protection.

The incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation approval, the incentive amount reserved will not be changed as long as the reservation is not cancelled.

UNS Electric's payment of a PBI will assure UNS Electric complete and irrevocable ownership of the REC for the full duration of the PBI agreement. The agreement duration must fully coincide with the PBI payment schedule and the system must be supported by system warranty or planned maintenance schedules for the term of the agreement.

### **PROJECT FUNDING**

Non-residential funds will be committed as bids are accepted; funds will not be placed in reserve for later in the year. As a result, the budget may be committed before the end of the year. Funds will be made available to projects based on a ranking generated by lowest expected life cycle credit purchase cost as provided in the application and verified by UNS Electric, as well as likelihood of construction. Projects submitted to the utility for reservation will be ranked based on a calculated index value for purposes of allocating non-residential funds as proposed in the application and verified by UNS Electric. Lowest lifecycle cost projects will be funded first. Indexing of the non-residential projects will be performed based on the verified incentive values and duration of the proposed agreement in the application for that project. In addition, the bid evaluator assesses the likelihood that the project will be completed. Projects with higher incentive payments result in a higher expected life cycle credit purchase cost and projects that produce more kWh result in a lower expected life cycle credit purchase cost. In the event of a tie in the ranking, when the program would be fully subscribed if both projects were given reservation status, funds will be awarded based on the date of receipt of the completed reservation request.

Reservation requests will reviewed by the utility on a monthly basis. Once reservation requests are fully ranked each month, notification of reservation approvals and rejections will be made in conformance with the rankings and available funding.

Funds unused in one period will be equally divided among the remaining periods in that year. Funds allocated to non-residential projects will not roll forward from one year to the next. Reservations which are rejected as a result of insufficient program funds may elect to carry forward into the next period and retain the original reservation date. The election must be made at the time of the original application.

### **THE FINE PRINT**

In addition to the other requirements described in this hand book, there are two other types of program details of which system owners and installers should be aware:

1. Installer qualifications

## Additional Technologies with Prescriptive Incentives

### 2. System removal

These are described in further detail below.

### **Installer Qualifications**

All systems receiving incentives under the RECPP must be installed by a qualified installer. The following requirements must be submitted by the applicant as part of the reservation request. UNS Electric will verify that the installer meets the following minimum qualifications prior to confirming a reservation request:

3. The installer must possess a valid license on file with the Arizona Registrar of Contractors ("AZROC") with a license classification appropriate for the technology being installed. Alternatively, the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. A copy of the AZROC license must be provided as part of the reservation request.
4. The installer must possess an Arizona business license that is active and in good standing.

Installers may request that the above information be retained on file with UNS Electric; however, under this option the installer must certify that the information on file remains current with the submission of each reservation request. Information on file must be renewed yearly.

### **System Removal**

If receiving a PBI, the Qualifying System or any components thereof shall not be removed from the premises until the last day of the final month of the final full calendar year of the applicable incentive payment term in the Agreement following completion of system installation of the renewable energy system, without express agreement from UNS Electric. If the Qualifying System is removed in violation of this provision, customer shall immediately reimburse UNS Electric all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that an additional incentive is not provided for any new distributed renewable energy resource system on that site until the REC contracted operational life of the original system has been completed.

UNS Electric shall attempt to monitor the number of missing or non-working distributed generation systems and shall summarize its observations in its annual Compliance Report.

**Attachment A**  
**Qualifications for Biomass/Biogas or Geothermal Space Heating,  
Process Heating or Space Cooling: Non-Residential Applications**

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement which is in conflict with a site-specific governmental requirement shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

Equipment Qualifications

1. Biomass/Biogas or geothermal system installations involving a regulated boiler or pressure vessel are required to comply with all Arizona state boiler regulations; provide a qualifying boiler inspection identification number; and keep all applicable permits in good standing.
2. Energy savings and designed output for the system will be verified by submitting either a testing certification for a substantially similar system prepared by a publicly funded laboratory or by submitting an engineering report stamped by a registered professional engineer. The engineering report shall provide a description of the system and major components, design criteria and performance expectations, applicable standards and/or codes, and a brief history of components in similar applications.
3. Energy production for space heating, space cooling and process heating will be calculated as one kWh of energy per 3,415 Btu of useful heat delivered by the system as measured by a dedicated heat delivery measuring meter and used by the building space or process.
4. The system will have a material and labor warranty of at least five years.
5. The system must meet Arizona DEQ environmental standards.

Installation Guidance

Because of the individual nature of biomass/biogas or geothermal systems, care should be taken to make sure the system complies with all applicable permitting and regulatory requirements including, but not limited to, air emission standards and air permit regulations.

General Qualifications

1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.
3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.

## Additional Technologies with Prescriptive Incentives

4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment.  
See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.

**Attachment B**  
**Qualifications for Biomass/Biogas, Hydro, or Geothermal Electric**

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement which is in conflict with a site-specific governmental requirement shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

Equipment Qualifications

1. Biomass/Biogas, Hydro or Geothermal system installations involving a regulated boiler or pressure vessel are required to comply with all Arizona state boiler regulations; provide a qualifying boiler inspection identification number; and keep all applicable permits in good standing.
2. System must include a dedicated performance meter to allow for monitoring of the amount of electricity produced.
3. Pre-operational/or pre-commissioning energy savings and design output for the system will be verified by submitting either a testing certification for a substantially similar system prepared by a publicly funded laboratory or by submitting an engineering report stamped by a qualified registered professional engineer. The engineering report shall provide a description of the system and major components, design criteria and performance expectations, applicable standards and/or codes, and a brief history of components in similar applications.
4. The system will have a material and labor warranty of at least five years.
5. The system must meet Arizona DEQ environmental standards.

Installation Guidance

Because of the individual nature of biomass/biogas hydro or geothermal systems, care should be taken to make sure the system complies with all applicable permitting and regulatory requirements including, but not limited to, air emission standards and air permit regulations.

General Qualifications

1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.
3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.

## Additional Technologies with Prescriptive Incentives

4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment.

See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.

**Attachment C**  
**Qualifications for Solar Space Cooling**

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement which is in conflict with a site-specific governmental requirement shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

Equipment Qualifications

1. The minimum cooling capacity of the system will be 120,000 BTU (10 tons) per hour.
2. Solar collector panels used will have a Solar Rating and Certification Corporation ("SRCC") OG-100 rating or laboratory documentation showing the panel energy output under controlled and replicable test conditions.
3. Energy savings and designed output for the system will be verified by submitting either a testing certification for a substantially similar system prepared by a publicly funded laboratory or by submitting an engineering report stamped by a registered professional engineer. The engineering report shall provide a description of the system and major components, design criteria and performance expectations, applicable standards and/or codes, and a brief history of components in similar applications.
4. System must include a dedicated performance meter to allow for monitoring of the amount of heat input to the thermal cooling device or system. Energy production will be calculated at one kW-hr per 3,415 Btu of metered heat delivered to the thermal cooling device or system.
5. The system will have a material and labor warranty of at least five years.
6. UNS Electric reserves the right to to modify standards as technology changes on a case by case basis, pending independent laboratory analysis, Professional Engineer ("PE") stamp, or UNS Electric engineering analysis

Installation Guidance

1. The horizontal tilt angle of the collector panels should be between 20 and 60 degrees and an azimuth angle should be between +/- 45 degrees of south.
2. All systems should be installed such that the energy collection system is substantially unshaded and should have substantially unobstructed exposure to direct sunlight between the hours of 9:00 a.m. and 3:00 p.m.
3. The system installation should comply with the design manual.

## Additional Technologies with Prescriptive Incentives

### General Qualifications

1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.
3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment.  
See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.

## **Technologies without Technology Specific Criteria**

Technology specific criteria have not yet been developed for the following qualifying technologies:

- Fuel Cells
- Other

For applicants requesting incentives for these technologies or for applicants requesting installation of a technology with specific project technology criteria, but where some criteria cannot be met, the applicant will need to submit design and output documentation.

Applicants installing these systems will, at a minimum, need to provide an energy savings and designed output report for the system. The report must include either a testing certification for a substantially similar system prepared by a publicly funded laboratory or an engineering report stamped by a qualified registered professional engineer. The engineering report and/or testing certification shall provide a description of the system and major components, design criteria and performance expectations, applicable standards and/or codes, and a brief history of components in similar applications. Additional information may be required as part of the RECPP requirements.

## Non-Conforming Projects

### **Non-Conforming Projects**

Non-conforming projects will be identified as the Program evolves. Incentive levels for such projects will be calculated based on UNS Electric engineering analysis, independent laboratory analysis, and/or professional engineering ("PE") stamps. Non-conforming projects that prove combined economic and renewable energy value will be allowed appropriately calculated incentives within the RECPP.



## Appendix 1: Incentive Summary Tables

### RECPP – CONFORMING PROJECT INCENTIVE MATRIX

2012 through 2014 Program Year

Technology/Application	UP FRONT INCENTIVE <sup>1</sup> 20-Year REC Agreement	10-Year REC Agreement <sup>2</sup> 10-Year Payment (\$/kWH)	15-Year REC Agreement <sup>2</sup> 15-Year Payment (\$/kWH)	20-Year REC Agreement <sup>2</sup> 20-Year Payment (\$/kWH)
BIOMASS/BIOGAS (Electric)	NA	0.060	0.056	0.054
BIOMASS/BIOGAS – CHP (Electric) <sup>3</sup>	NA	0.035	0.032	0.031
BIOMASS/BIOGAS – CHP (Thermal) <sup>3</sup>		0.018	0.017	0.016
BIOMASS/BIOGAS (thermal)	NA	0.015	0.014	0.013
BIOMASS/BIOGAS (cooling)	NA	0.032	0.030	0.029
DAYLIGHTING (Non-Residential)	\$0.18/kWH <sup>7</sup> See this note for clarification	NA	NA	NA
GEOHERMAL – (electric)	NA	0.024	0.022	0.022
GEOHERMAL – (thermal)	NA	0.048	0.045	0.043
Ground Source Heat Pump – (cooling)	\$500/ton	NA	NA	NA
SMALL HYDRO	NA	0.060	0.056	0.054
SMALL WIND (grid-tied) <sup>4</sup>	\$2.25/Watt AC	NA	NA	NA
SMALL WIND (off-grid) <sup>4</sup>	\$1.80/Watt AC	NA	NA	NA
SOLAR ELECTRIC:				
RESIDENTIAL (GRID-TIED)	\$3.00/Watt DC <sup>8</sup>	NA	NA	NA
Non-Residential (Grid-Tied) 20 kW or less	\$2.50/Watt DC <sup>8</sup>	NA	NA	NA
NON-RESIDENTIAL (GRID-TIED) More than 20 kW	NA	0.182	0.168	0.162
RESIDENTIAL (OFF-GRID)	\$2.00/Watt DC <sup>8</sup>	NA	NA	NA
NON-RESIDENTIAL (OFF-GRID)	\$2.00/Watt DC <sup>8</sup>	NA	NA	NA
SOLAR SPACE COOLING <sup>5</sup>	NA	0.116	0.108	0.104
SOLAR WATER HEATING/SPACE HEATING <sup>5,9,10</sup> (Non-Residential, 35,000 annual kWh output production equivalent or less)	\$750 plus \$0.50/kWH	NA	NA	NA
RESIDENTIAL SOLAR WATER/SPACE HEATING (35,000 annual kWh output production equivalent or less) <sup>6,9,10</sup>	\$750 plus \$0.25/kWH	NA	NA	NA
NON-RESIDENTIAL POOL HEATING	NA	0.116	0.108	0.104

Notes:

- 1) Residential projects are eligible for an up front incentive (UFI). UFI payments can not exceed 60% of the cost of renewable energy equipment.
  - 2) Non-residential systems under 100 kW is a UFI but can be a PBI. Non-residential 100 kW and greater is PBI only. The total of payments under a production based incentive can not exceed 60% of the project costs for any project.
  - 3) The CHP incentives may be used in combination for the appropriate components of one system.
  - 4) This PBI applies to a maximum system size of 1 MW.
  - 5) The solar space heating and cooling incentives may be used in combination for the appropriate components of one system.
  - 6) This category includes both traditional water heating and those systems combined with residential solar water heating used for space heating. Space heating applications require a report detailing energy saving for the complete system.
  - 7) Rate applies to measured first five years of energy savings only. Payments are made over a five year period.
  - 8) Some UFI based installations will require an adjustment of the incentive as detailed in the Solar Electric Incentive Adjustment Chart.
  - 9) Energy savings rating is based on the SRCC OG-300 published rating or the UNS Electric-RECPP Space Heating Calculator. The customer contribution must be a minimum of 15% of the project cost after accounting for and applying all available Federal and State incentives.
  - 10) Rate applies to forecast/measured first year energy savings only.
- NA – Not Available

## Appendix 2: Glossary of Terms

**ACC** – Arizona Corporation Commission.

**AZROC** – Arizona Registrar of Contractors.

**Applicant** – Utility customer of record for the Utility Revenue Meter located at the installation site; a builder of the structure (residential or non-residential) who will reserve and install the Qualifying system; or for an off-grid Qualifying System, the property owner for the installation site located within a Utility's service territory.

**Arizona Business License** – A business license issued by the ACC.

**Cancelled** – Reservation Status indicating that a Reservation has been terminated, funding is no longer allocated, and the utility has removed the reservation from the funding queue.

**Cancellation** – The termination of the Reservation.

**Commissioned** – Qualifying System certified to be in operation.

**Commissioning Package** – Written verification signed by the installer and the customer confirming that the system has been installed in conformance with the approved reservation and that the system is ready for operation.

**Conforming Project** – Any project utilizing a renewable technology listed in Attachment D.

**Conformance Inspection** – Inspection performed by the utility to verify that the system has been installed and operates in conformance with the Reservation application.

**Customer** – Utility customer of record for the Utility Revenue Meter located at the installation site or a builder of the structure (residential or non-residential) who will reserve and install the Qualifying System.

**Extension** – The extension of the Reservation Timeframe.

**Installer** – The entity or individual responsible for the installation of a qualifying system.

**Interconnection Inspection** – Inspection performed by the utility to confirm that the system can be safely interconnected to the power grid.

**Non-Conforming Project** – Non-conforming projects include, but are not limited to, projects with staged completion dates, multi-customer or multi-system projects, projects involving more than one technology, projects requiring new or unique agreement terms, projects with technologies for which qualification standards have not been developed or projects requiring non-standard timeframes.

## Appendix 1: Incentive Summary Tables

**Performance Based Incentive (“PBI”)** – Incentive based on a rate per actual kWh output or on equivalent kWh of energy savings.

**Project Costs** – System Costs plus financing costs.

**Proof of Project Advancement** – Documentation demonstrating that a project is progressing on schedule and is staged for Commissioning on or before the end of the Reservation Timeframe.

**Qualifying System** – Distributed renewable energy systems meeting the qualifications for production of qualified Renewable Energy Credits in Arizona acceptable to the Arizona Corporation Commission as they may be defined for affected utilities to meet any renewable energy standards.

**Renewable Energy Credit (“REC”)** – One Renewable Energy Credit is created for each kWh, or kWh equivalent for non-generating resources, derived from an eligible renewable energy resource. RECs shall include all environmental attributes associated with the production of the eligible renewable energy resource.

**Reservation** – A dollar amount committed by the utility to fund a project if all program requirements are met.

**Reservation Status** – Indicator relating to approval or denial of a Reservation request. If a Reservation is approved, the Reservation Status is Reserved. If a Reservation request is denied, the Reservation Status is either Cancelled or Wait Listed.

**Reserved** – Status indicating the acceptance of a Reservation request.

**Reservation Timeframe** – The duration of the utility’s funding commitment for a Reservation.

**System Costs** – Costs associated with the Qualifying System components, direct energy distribution, system control/metering, and standard installation costs directly related to the installation of the Qualifying System.

**Up Front Incentive (UFI)** – One time incentive payment based on system capacity or estimated energy kWh production rather than on measured system output.

**Wait List** – Status indicating Applicant has met program requirements, but the Utility has insufficient funding to commit to funding the project.

**Renewable Energy Standard and Tariff  
2010 Budget**

## Exhibit 2

### UNSE Renewable Energy Standard Tariff Cost Recovery Factors Definition for 2010

Total REST Budget 2010	\$ 7,834,136
<b>Purchased Renewable Energy:</b>	
Above Market Cost of Conventional Generation calculated annually on hourly data per MCCCCG Matrix <sup>aa</sup>	\$ 1,877,284
Transmission direct-use cost	\$ -
Transmission line-loss cost	\$ -
Grid management ancillary services and day-ahead unit commitment cost	\$ -
Grid stability analysis cost allocation, EPRI research, & other RE research costs <sup>ab</sup>	\$ 5,000
Fuel and maintenance \$ assoc. w/ increased CT use and load range ramp cycles to manage over/under scheduled RE	\$ -
RFP preparation, issue and evaluation cost <sup>ac</sup>	\$ 2,000
Independent Auditor cost <sup>ad</sup>	\$ 10,000
Loss of revenue from off-system sales due to transmission constraints created by transmission alloc. to RE PPA	\$ -
Labor overhead allocation cost for purchased renewable power contracts <sup>ae</sup>	\$ 10,000
In-state renewable resource economic development premium payment cost	\$ -
<b>Total</b>	<b>\$ 1,904,284</b>
<b>Customer Sited Distributed Renewable Energy:</b>	
Up-front subsidy payment to customers' cost <sup>ba</sup>	\$ 5,146,623
Annual production-based performance payment to customers' cost <sup>bb</sup>	\$ 782,412
Builder solar energy system program <sup>bc</sup>	\$ 75,000
Interconnection and net meter application processing labor cost <sup>bd</sup>	\$ 27,000
Acceptance testing cost <sup>be</sup>	\$ 54,000
Customer technical support cost <sup>bf</sup>	\$ 100,000
Annual meter reading cost <sup>bg</sup>	\$ 5,000
Support tools, materials, transportation and supply cost <sup>bh</sup>	\$ 35,000
Direct internal labor cost for administration of the customer sited renewable generation program <sup>bi</sup>	\$ 125,000
Outside services and internal labor for outreach, marketing materials, education and website maintenance cost <sup>bj</sup>	\$ 200,000
Grid management cost	\$ -
Grid management cost study, EPRI research, and other RE research <sup>bk</sup>	\$ 25,000
Cost-of-service contracts for outside labor for inspections and maintenance <sup>bl</sup>	\$ 25,000
Loss of revenue from the fixed-cost portion of customer charges displaced by customer self generation	181,838 removed by staff
Utility Performance Incentives	16,348 removed by staff
Customer Self-directed Program	\$ -
<b>Total*</b>	<b>\$ 6,600,035</b>
<b>Information Systems Integration Costs:</b>	
Annual administrative CC&B cost database upgrades <sup>ca</sup>	\$ 25,000
Initial database and customer interface program development and program revision cost <sup>cb</sup>	\$ -
Capital A&G load allocations for above development work <sup>cc</sup>	\$ -
CC&B incremental transaction allocation cost for CC&B support <sup>cd</sup>	\$ 25,000
<b>Total</b>	<b>\$ 50,000</b>
<b>Net Metering:</b>	
Direct material cost for meters <sup>da</sup>	\$ 41,614
Direct energy credit purchase cost (12 mo. True-up) <sup>db</sup>	\$ 6,769
Time-of-Use Net Metering Program development cost	\$ -
Net Metering data interval recording for load research and program metrics evaluation	\$ -
Communications for Net Metering data retrieval	\$ -
<b>Total**</b>	<b>\$ 36,000</b> staff reduced by \$12,382

**Reporting:**

Annual Compliance Report and hearing cost <sup>aa</sup>	\$	5,000
Annual Planning and Implementation Report and hearing cost <sup>ab</sup>	\$	25,000
Annual Tariff review and hearing cost <sup>ac</sup>	\$	25,000
Labor overhead and CC&B transaction allocation cost for reporting <sup>ad</sup>	\$	5,500
<b>Total</b>	\$	<b>60,500</b>

**Outside Coordination and Support:**

Support provided to University research projects (eg. AzRise) <sup>fa</sup>	\$	20,000
Support through providing information and answering questions of national energy labs cost <sup>fb</sup>	\$	-
Support through providing information and testing equipment of renewable energy equipment vendors cost <sup>fc</sup>	\$	-
Responding to renewable energy questions from non UNSE customers' cost <sup>fd</sup>	\$	10,000
Support of outside service territory renewable energy interest cost <sup>fe</sup>	\$	-
WREGIS and other renewable energy certification agency fee cost	\$	-
Utility Wind Interest Group fee cost <sup>ff</sup>	\$	5,000
Solar Electric Power Association fee cost <sup>fg</sup>	\$	4,500
Other renewable energy association fees as needed cost <sup>fh</sup>	\$	-
Training, travel, memberships, periodicals, etc. cost <sup>fi</sup>	\$	20,000
Labor overhead allocation cost for outside coordination and support <sup>aj</sup>	\$	10,000
<b>Total***</b>	\$	<b>54,500</b> staff reduced by \$15,000

**Renewable Energy Hardware Development:**

Technology development projects – geothermal heat pumps, residential solar units, residential wind generation, etc. cost <sup>ga</sup>	\$	-
Energy storage demonstration project cost <sup>gb</sup>	\$	-
Operation and maintenance of renewable generation systems cost <sup>gc</sup>	\$	-
Renewable energy resource monitoring program cost <sup>gd</sup>	\$	-
Support of Arizona-wide renewable energy studies cost <sup>ge</sup>	\$	-
Up-front funded renewable technology construction cost <sup>gf</sup>	\$	-
Development of wind and solar forecasting program costs <sup>gg</sup>	\$	-
Development of load-shed systems for managing rapid changes in renewable energy generation levels cost <sup>gh</sup>	\$	-
Property taxes, sales taxes and insurance for renewable energy hardware costs <sup>gi</sup>	\$	-
Labor overhead, Stores loads, allocation cost for renewable energy hardware development <sup>gj</sup>	\$	-
<b>Total</b>	\$	<b>-</b>

**2010 Program Total**

\$ 8,705,319

**Overcollection of REST Funds from 2008**

\$ (871,183)

**Grand Total**

\$ 7,834,136

- \* DG budget reduced by \$198,186 to conform to staff's budget
- \*\* Net metering reduced by \$12,382 to conform to staff's budget
- \*\*\* Outside support budget reduced by \$15,000 (except AzRise) to conform to staff's budget

Notes:

aa: 38,638 MWh @ \$50.47 per MWh above cost of MCCCCG – Purchased Power. Contracts are in addition to existing power purchase contracts, costs are incremental and caused by renewable purchased power contracts.

ab: Annual analysis of hourly delivery intermittencies on grid stability, forecasting development. Evaluation time is in addition to existing power purchase analysis and due to time variant nature of wind power. Also includes costs for research performed by EPRI and other sources.

ac: Internal development, review, posting, query response, evaluation, contract development and close out – internal UES personnel, 20 hours. RFPs are in addition to existing power purchase RFPs, costs are incremental and caused by renewable purchased power.

ad: Historic cost basis.

ae: Contract administration, settlement review, payment approval, internal overhead – internal UES personnel, 100 hours. Contracts are in addition to existing power purchase contracts, costs are incremental and caused by renewable purchased power contracts.

ba: Residential & Small Commercial – est. 79% will be PV, 17.5% will be SDWH, 3.5% will be wind power. See Exhibit 1

bb: Commercial PBI: Solar PV – 100% 4830 MWh/yr/ @ \$0.16 = \$0.78M.

bc: Assumes an incremental .50 /watt DC for 50 homes with an average panel size of 3kWDC. (\$75k)

bd: assume .5 FTE - 362 PV units & 128 hot water/wind @ 1000 units/person-year.

be: assume 1 FTE - 362 PV units & 128 hot water/wind @ 500 units/person-year.

bf: assume 1 FTE - 362 PV units & 128 hot water/wind @ 500 units/person-year + commercial.

bg: Historic cost basis

bh: Vehicle, small tools, and consumables for 1 mobile unit

bi: 1 supervisory/managerial person

bj: Direct-outreach education expense with providers. Includes media purchases, printing, and design.

bk: Studies of solar time-variant output impact on distribution grid. Review of solar capacity value. Used for matching grant funding. Also includes research performed by EPRI or other sources.

bl: Used for annual inspections, customer support. Based on historic costs extrapolated to 1,200 customers from \$25,000/year for 300 customers.

ca: Initial estimate – discovery in progress - new programming.

cb: 2008 Estimated cost @ \$100k.

cc: Initial estimate – discovery in progress.

cd: Initial estimate – discovery in progress - database upgrades.

da: approximately 353 net meters @ \$118 incremental cost per meter

db: Estimate based upon approx. 482 PV systems @ average 281 kWh credit @ \$0.05 per kWh

ea: Historic cost basis, extrapolated to a larger program with more reporting factors.

eb: Historic cost basis, extrapolated to a larger program with more reporting factors.

ec: Historic cost basis, extrapolated to a larger program with more reporting factors.

ed: Calculated as 10% of internal labor costs.

fa: Funding support for projects to fund renewable research at such entities as AzRise.

fb: Historic cost basis, extrapolated to a larger program with more reporting factors. Program manager level respondent.

fc: Historic cost basis, extrapolated to a larger program with more reporting factors. Program manager level respondent.

fd: Historic cost basis, extrapolated to a larger program with more reporting factors. Administrative level respondent.

fe: Historic cost basis, extrapolated to a larger program with more reporting factors. Administrative level respondent.

ff: Based on proposal.

fg: Historic based.

fh: Historic based. Biomass, geothermal, etc.

fi: Historic based for 4 employees.

fj: Historic cost basis, extrapolated to a larger program with more reporting factors.

ga: Estimated based on project size and mix.

gb: Estimated based on project size and mix.

gc: Historic based. OH, DAMP and SASS

gd: Historic based.

ge: Historic based.

gf: Operating Headquarters Test Yard

gg: Matching funds for grants in application.

gh: Matching funds for grants in application.

gi: Historic based.

gj: Calculated as 10% of internal labor costs = \$0 plus 2% of transaction costs = \$0 Total = \$0

**Renewable Energy Standard and Tariff Surcharge**  
**REST-TS1**

**Renewable Energy Program Expense Recovery**



**Renewable Energy Standard and Tariff Surcharge  
REST-TS1  
Renewable Energy Program Expense Recovery**

---

APPLICABILITY

Mandatory, non-bypassable surcharge applied to all energy consumed by all customers throughout Company's entire electric service area.

RATES

For all energy billed which is supplied by the Company to the customer, the price shall be \$0.007134 per kWh of metered monthly energy consumption on all kWh consumed per meter that month up to and including a monthly cap of:

For Residential customers:	\$9.00 per month
For Commercial customers:	\$140.00 per month
For Industrial customers:	\$2,700.00 per month

Note: An industrial customer is one with monthly demand equal to or greater than 3,000 kW.

For non-metered services, the lesser of the load profile or otherwise estimated kWh required to provide the service in question, or the service's contract kWh shall be used in the calculation of the surcharge.

This charge will be a line item on customer bills reading "Renewable Energy Standard Tariff."

RULES AND REGULATIONS

The standard Rules and Regulations of the Company as on file with the Arizona Corporation Commission shall apply where not inconsistent with this pricing plan.

TAX CLAUSE

To the charges computed under the above rate, including any adjustments, shall be added the applicable proportionate part of any taxes or governmental impositions which are or may in the future be assessed on the basis of gross revenues of the Company and/or the price or revenue from the electric energy or service sold and/or the volume of energy generated or purchased for sale and/or sold hereunder.

---

Filed By: Raymond S. Heyman  
Title: Senior Vice President  
District: Entire Electric Service Area

Tariff No.: REST-TS1  
Effective: February 1, 2010  
Page No.: 1 of 1

**Customer Self-Directed Renewable Energy Option**

**REST-TS2**

**Renewable Energy Standard Tariff**



**Customer Self-Directed Renewable Energy Option  
REST-TS2  
Renewable Energy Standard Tariff**

---

AVAILABILITY

Open to all Eligible Customers as defined at A.A.C. R14-02-1801.H.

APPLICABILITY

Any Eligible Customer that applies to the Company under this program and receives approval shall participate at its option.

PARTICIPATION PROCESS

An Eligible Customer seeking to participate shall submit to the Company a written application that describes the Distributed Renewable Energy (DRE) resources or facilities that it proposes to install and the estimated costs of the project. The Company shall have sixty (60) calendar days to evaluate and respond in writing to the Eligible Customer, either accepting or declining the project. If accepted, the Customer shall be reimbursed up to the actual dollar amounts of customer surcharge paid under the REST-TS1 Tariff in any calendar year in which DRE facilities are installed as part of the accepted project. To qualify for such funds, the Customer shall provide at least half of the funding necessary to complete the project described in the accepted application, and shall provide the Company with sufficient and reasonable written documentation of the project's costs. Customer shall submit their application prior to May 1 of a given year to apply for funding in the following calendar year.

FACILITIES INSTALLED

The maintenance and repair of the facilities installed by a Customer under this program shall be the responsibility of the Customer following completion of the project. In order to be accepted by the Company for reimbursement purposes, the project shall, at a minimum, conform to the Company's System Qualification standards on file with the Commission. (REST Implementation Plan, Renewable Energy Credit Purchase Program – RECPP, Distributed Generation Interconnection Requirements, Net Metering Tariff, Company's Interconnection Manual)

PAYMENTS AND CREDITS

All funds reimbursed by the Company to the Customer for installation of approved DRE facilities shall be paid on an annual basis no later than March 30<sup>th</sup> of each calendar year. All Renewable Energy Credits derived from a project, including generation and Extra Credit Multipliers, shall become the property of the Company and shall be applied towards the Company's Annual Renewable Energy Requirement as defined in A.A.C. R14-2-1801.B.

RULES AND REGULATIONS

The standard Rules and Regulations of the Company as on file with the Arizona Corporation Commission shall apply where not inconsistent with this pricing plan.

RELATED SCHEDULES

- REST-TS1 - Renewable Energy Program Expense Recovery

---

Filed By: Raymond S. Heyman  
Title: Senior Vice President  
District: Entire Electric Service Area

Tariff No.: REST-TS2  
Effective: February 1, 2010  
Page No.: 1 of 1