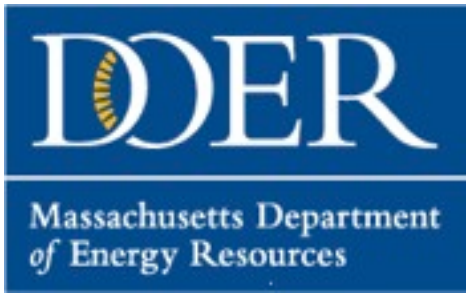
Creating A Clean, Affordable, and Resilient Energy Future For the Commonwealth



COMMONWEALTH OF MASSACHUSETTS
Charles D. Baker, Governor
Karyn E. Polito, Lt. Governor
Matthew A. Beaton, Secretary
Judith Judson, Commissioner

Next Generation Solar Incentive Stakeholder Meeting #7

December 15, 2016

Agenda

- Review of progress to date (30 minutes
- On-bill crediting mechanism (30 minutes)
- Rate setting process and competitive procurement (1 hour)

DOER Solar Stakeholder Process

- Presented straw proposal to nearly 400 stakeholders on September 23rd
- Over 130 sets of comments totaling 600+ pages were received on proposal by October 28th deadline
- DOER established stakeholder engagement process at the beginning of October
- Established six working groups:
  1. Metering, Billing, and Crediting
  2. Application Review and Block Management
  3. Tariff Adders and Eligibility Criteria
  4. Land Use & Siting
  5. Energy Storage
  6. Tariff Design & DPU Process

Next Steps

- Approaching the close of this engagement process and will soon move into the rulemaking
- Today will be the final large working group meeting
- DOER is finalizing its proposal and going through an internal review process
- We hope to issue a revised proposal in early January and file an

Progress to Date

- Agreement on utilizing 3rd party administrator for program administration:
  - Application review and block management
  - Incentive calculation and payment
  - Independent verification of production data
- On-bill credit calculations for virtually metered systems will be performed by other entities and/or utilities
- RFP will be jointly issued by utilities shortly after regulations are filed
- Administrator expected to be capable of performing all functions by the time the tariff is approved by DPU

Metering and Reporting

- Metering
  - Two separate meters
    - Utility customer meter
    - Production meter
  - Utility will own production meter and will report data to administrator on a monthly basis
  - Technical requirements for meters still need to be refined, but would likely mirror existing standards
  - System owner may own redundant

Qualification Process and

- Qualification Criteria
  - Two levels of qualification
    - Block reservation (pre-interconnection)
    - Tariff enrollment (post-interconnection)
  - Basic qualification criteria will model MassACA and DOER Assurance of Qualification for projects above 25 kW:
    - Executed ISA, Site Control, Non-ministerial permits
  - Criteria for projects 25 kW and less will be modeled on Commonwealth Solar II Rebate
    - Executed turnkey contract with customer
    - Notice of complete interconnection application
  - All facilities will be required to submit authorization to interconnect and utility account information in order to enroll in

Reservation Periods and Block

- Initial Reservation Period:
  - 12 months
- Extended Reservation Periods:
  - Indefinite for mechanical completion
  - 6-month legal challenge
  - 6-month one-time extension
    - How much should the fee for extending be? $25/kW?
  - Exceptions for good cause
- Queue Order
  - First-come, first-served
  - Incomplete applications hold position until end of "cure period."
  - Minimum of two weeks for cure period
- Block Allocation
  - Last project in gets blended rate.
  - If a project does not meet deadlines, it loses its reservation and current block is increased accordingly.
  - Minimum 20% set-aside for small (<=25 kW)

Tariff Adders

- Location based adders:
  - DOER and MDAR to establish criteria for agricultural and canal canopies
  - Some discussion about including a rooftop + re-roof adder for rooftops that need to be replaced
- Off-taker based adders:
  - DOER has proposed including $0.02/kWh adder for public projects
  - DOER has suggested minor modifications to proposed adders
- Policy based adders:
  - DOER has proposed eliminating the non-net metered adder

Treatment of MLPs

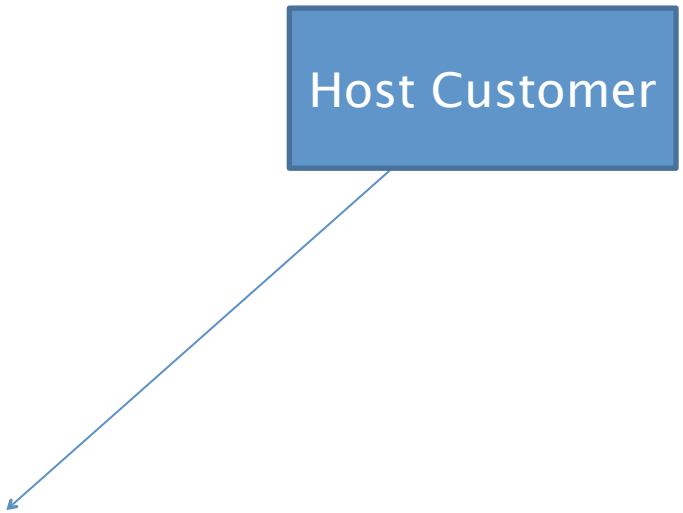
- MLPs indicated to DOER that they strongly opposed any mandatory obligations or requirements
- Initially opposed voluntary program as well, but several productive meetings have led to them expressing interest to work to create a framework for voluntary MLP solar program
- Broad interest in designing a program that will allow MLP participation
- Implementation will be staggered with tariff proceeding, with DOER re-opening its regulation to add MLP program components immediately after completing the emergency regulation to implement the tariff structure
- Rulemaking for MLP program will occur

Solar Energy Compensation

Facility	Compensation Rate	Term Length
Net Metered	1. Full NEM Credit Rate 2. Market NEM Credit Rate	1. 25 years (reverts to market NEM
Non-Net Metered	Basic Service minus RPS?	Indefinite?
Qualifying Facility	Hourly market clearing price plus monthly market clearing price for	Indefinite
ISO-NE Market	Locational marginal price	Indefinite

Net Metering Flow Chart

Net Metering Flow Chart



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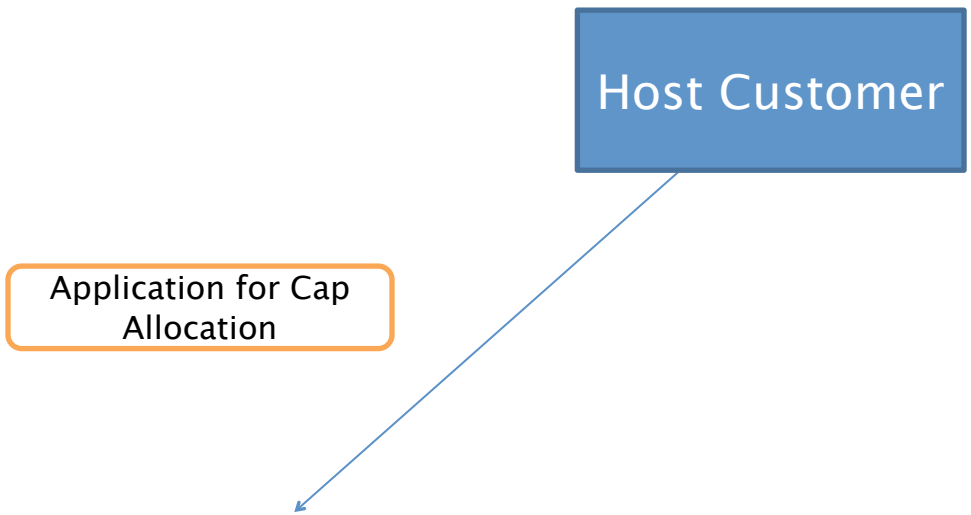

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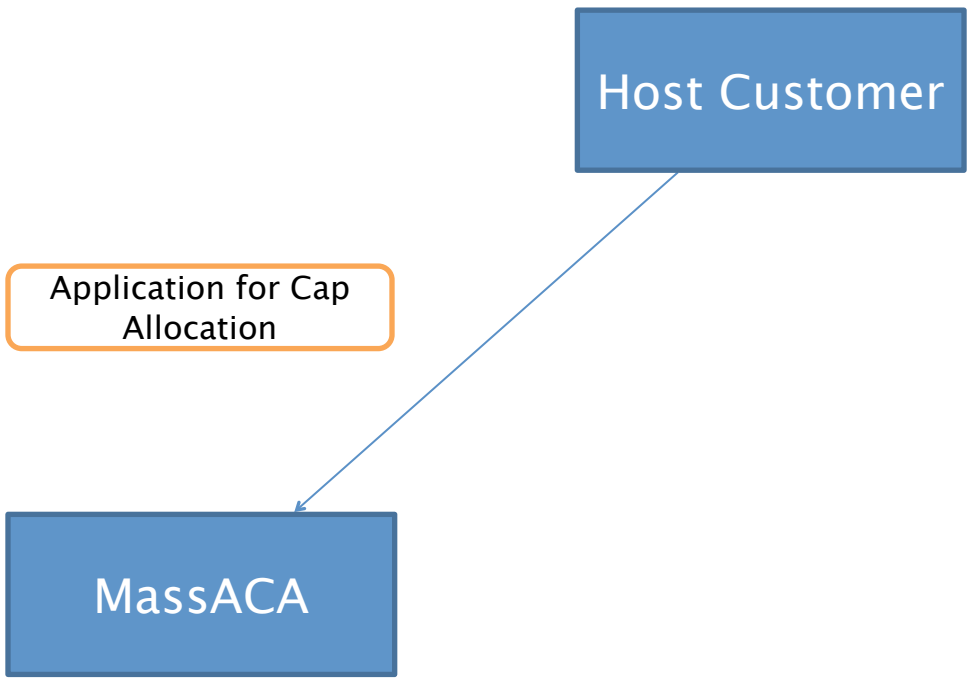

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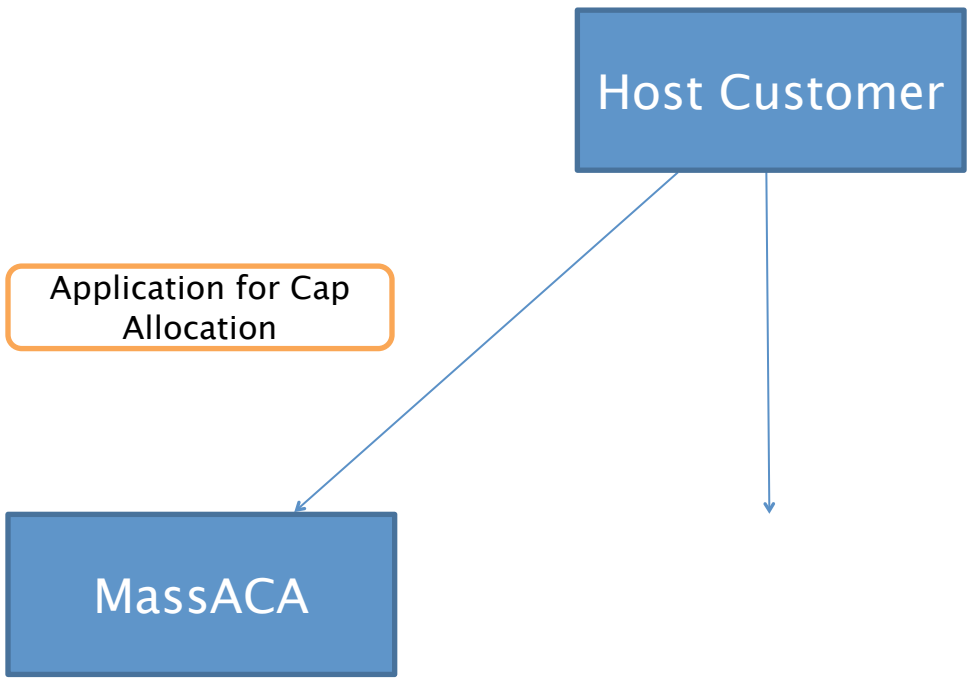

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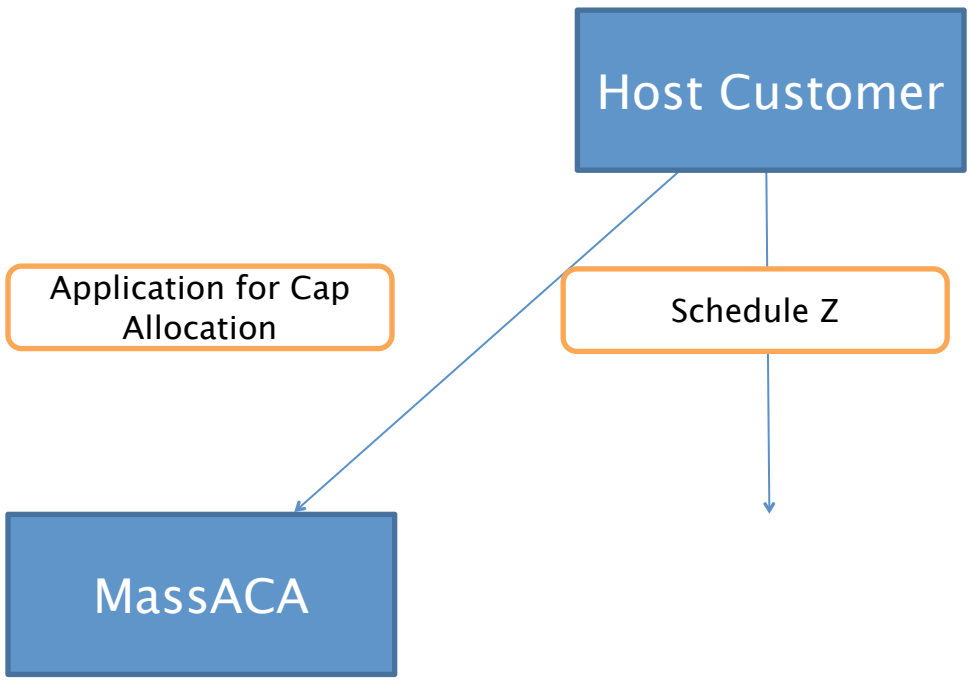

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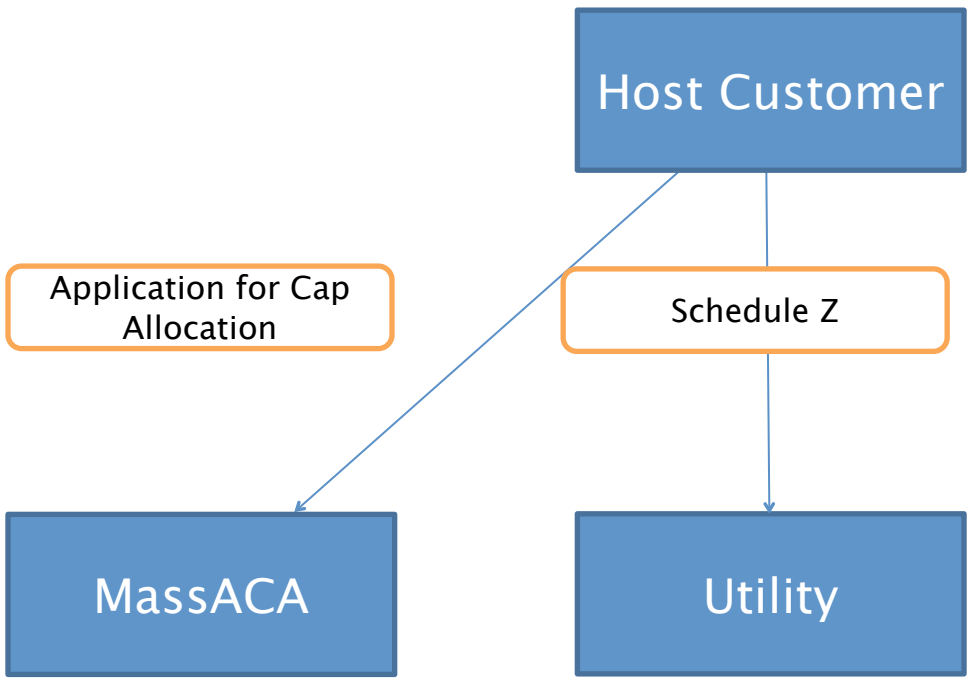

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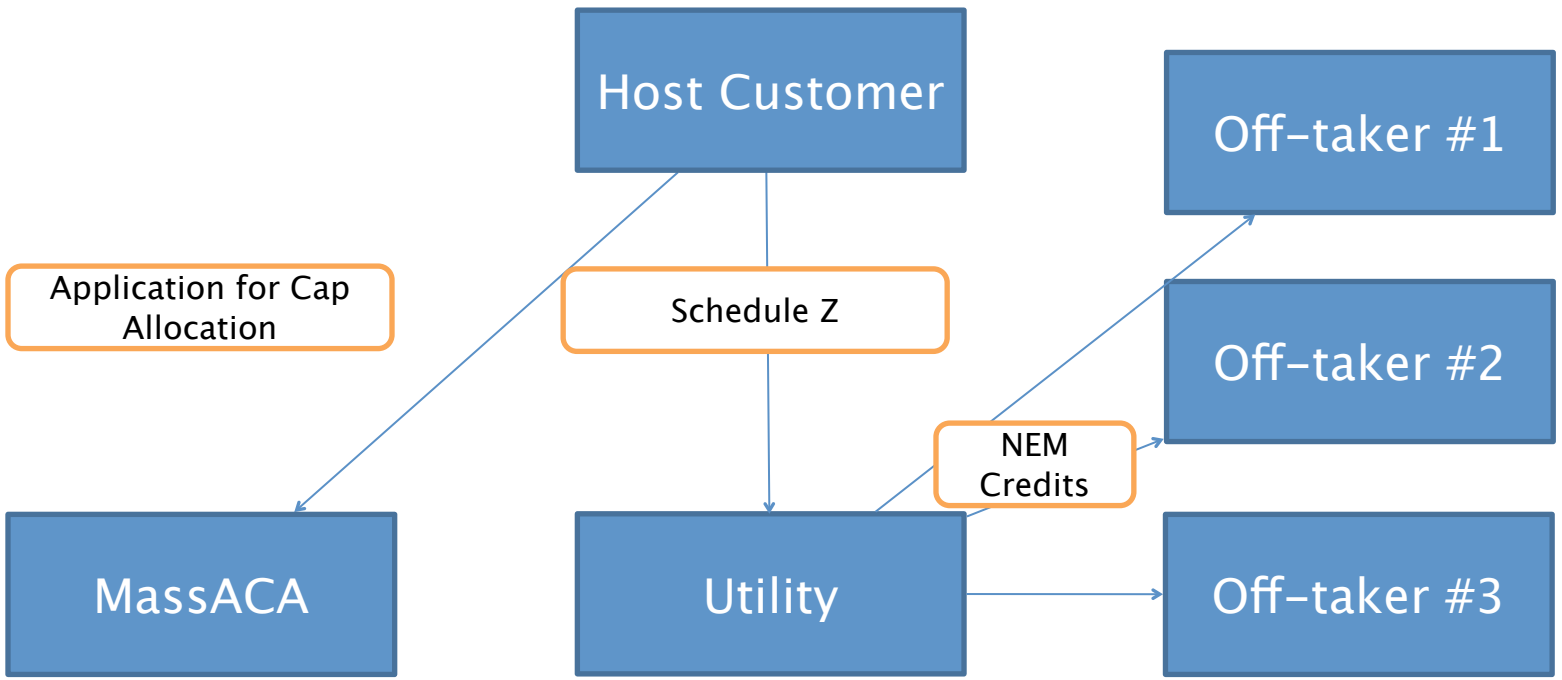

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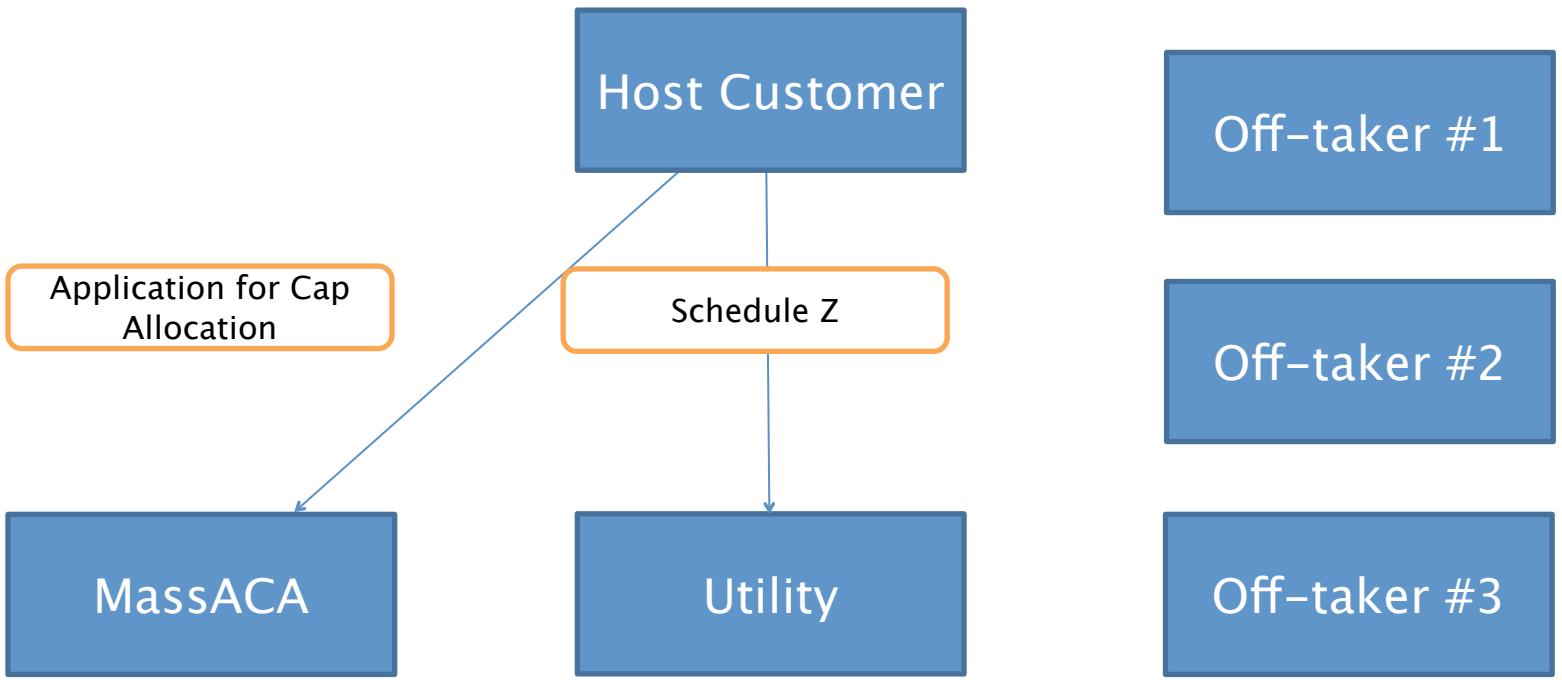

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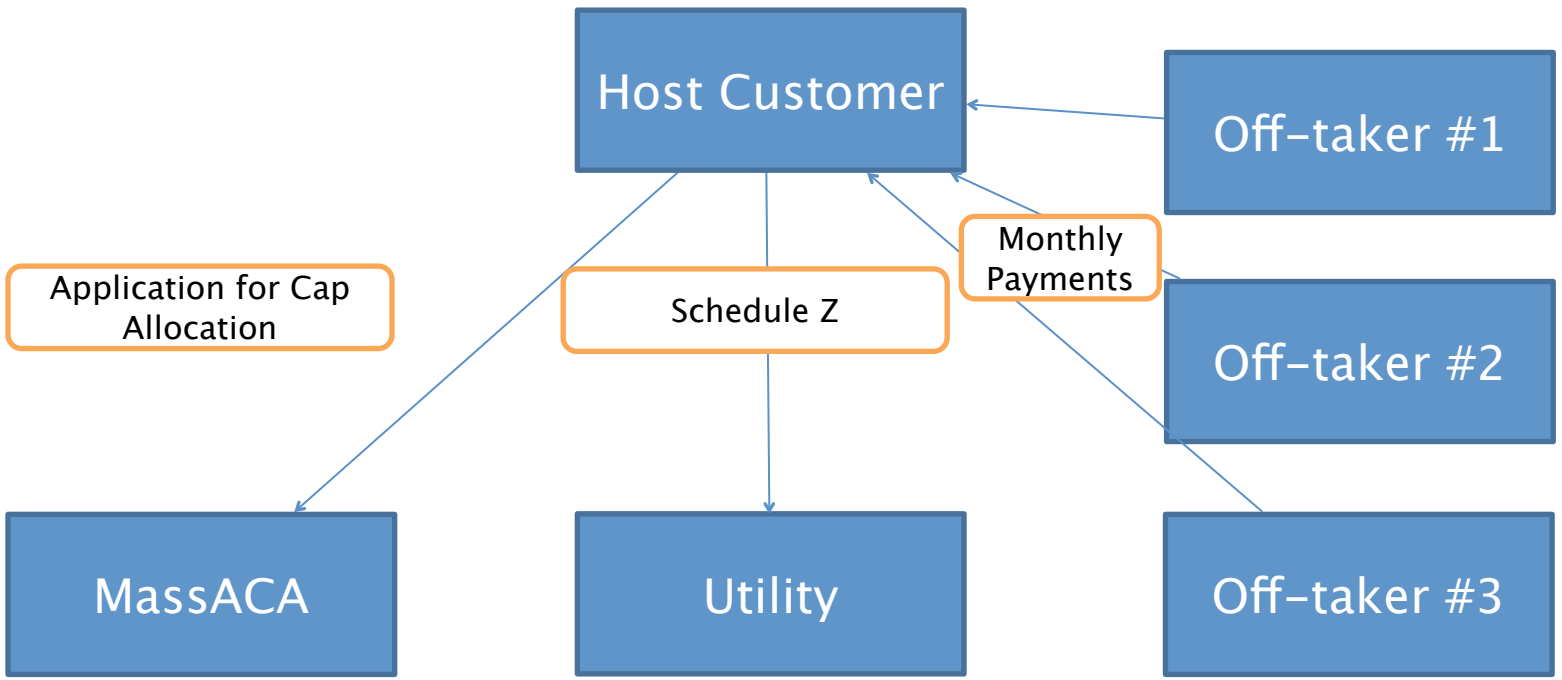

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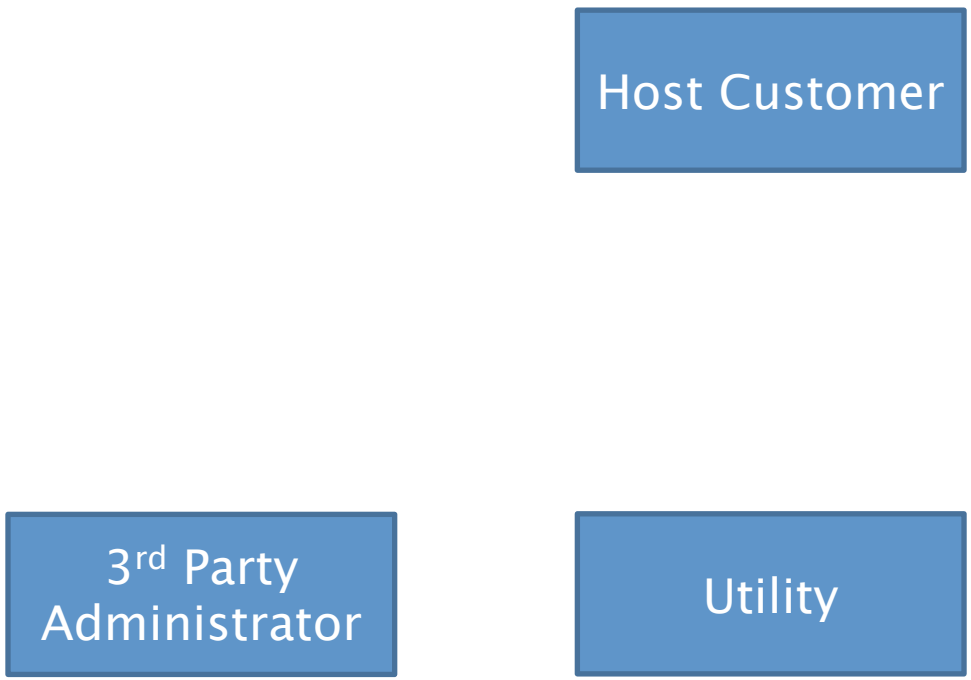
Non-Net Metering Flow Chart



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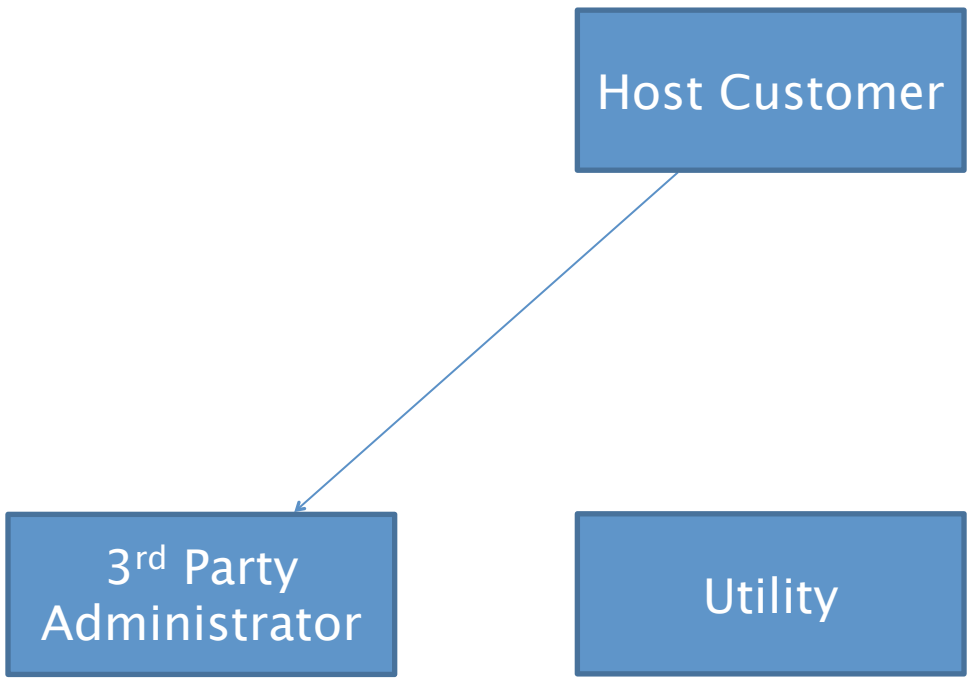

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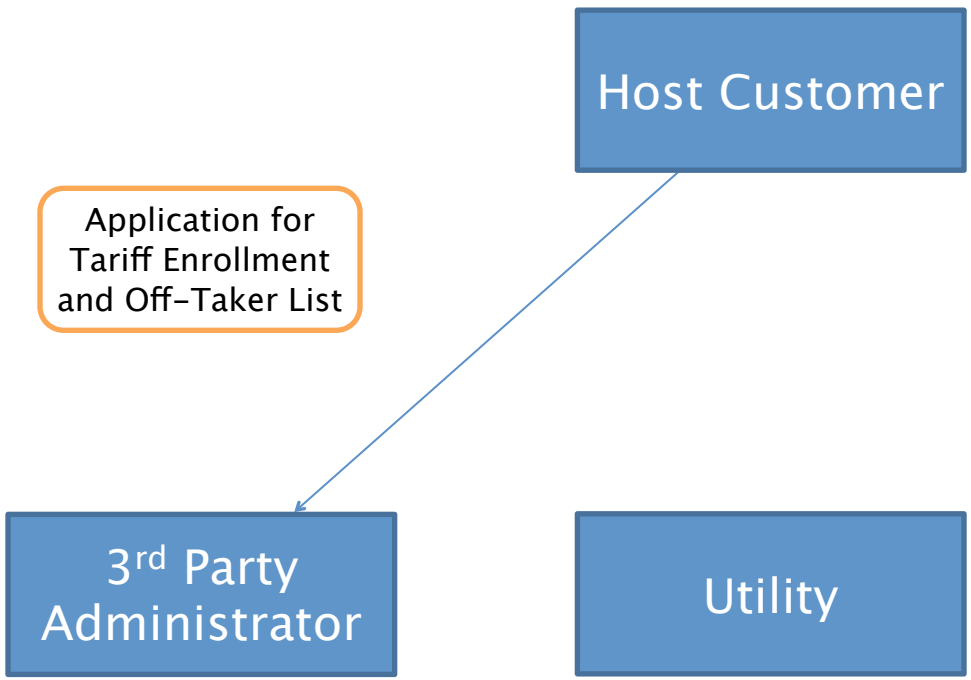

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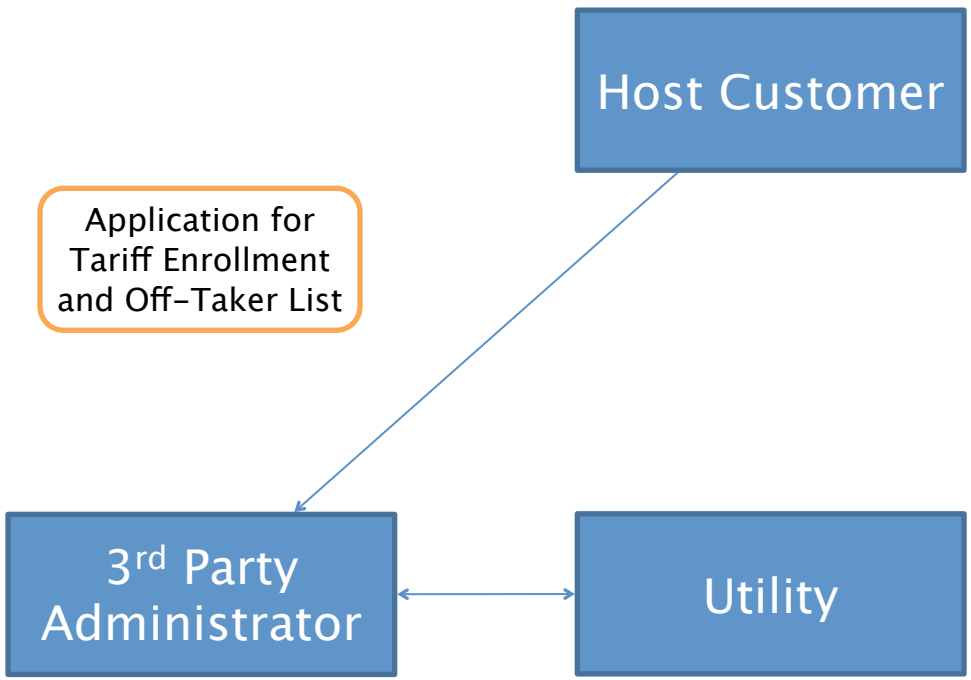

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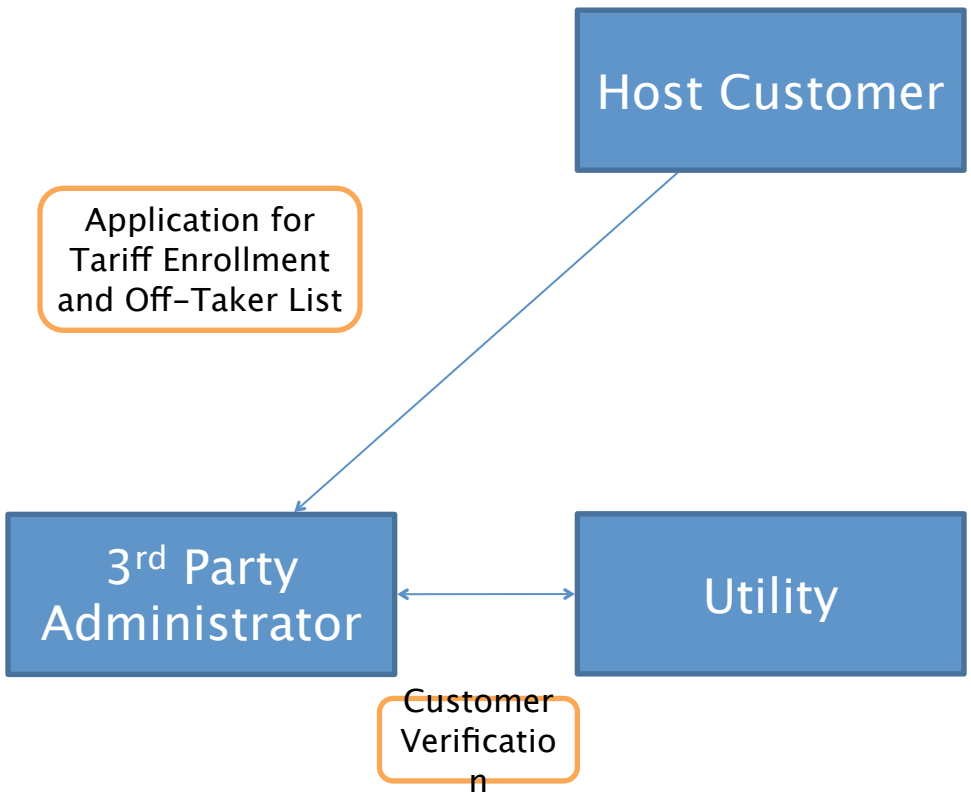

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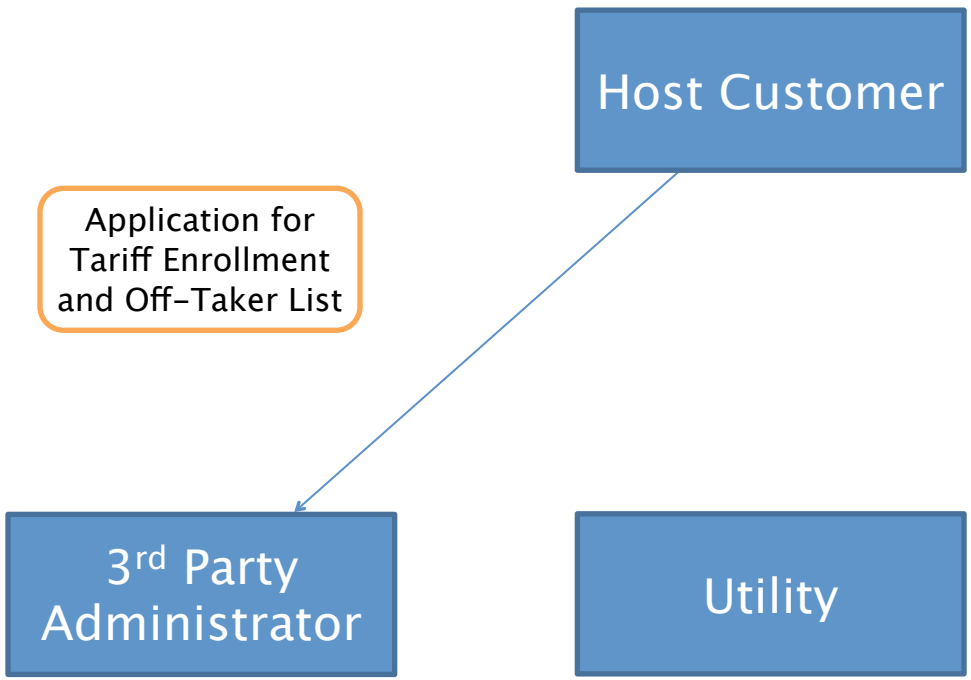

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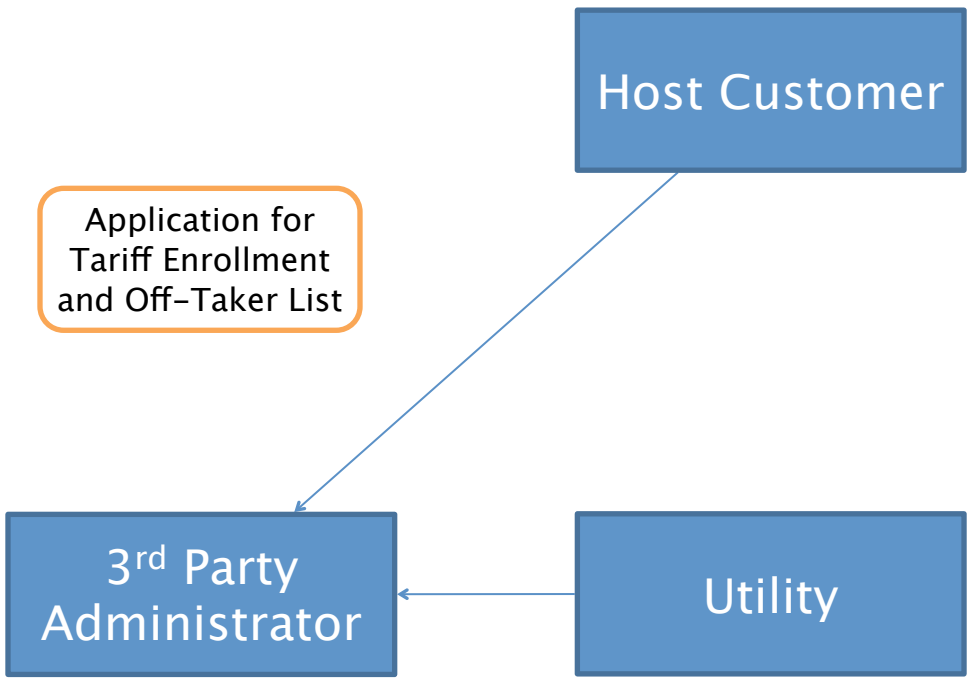

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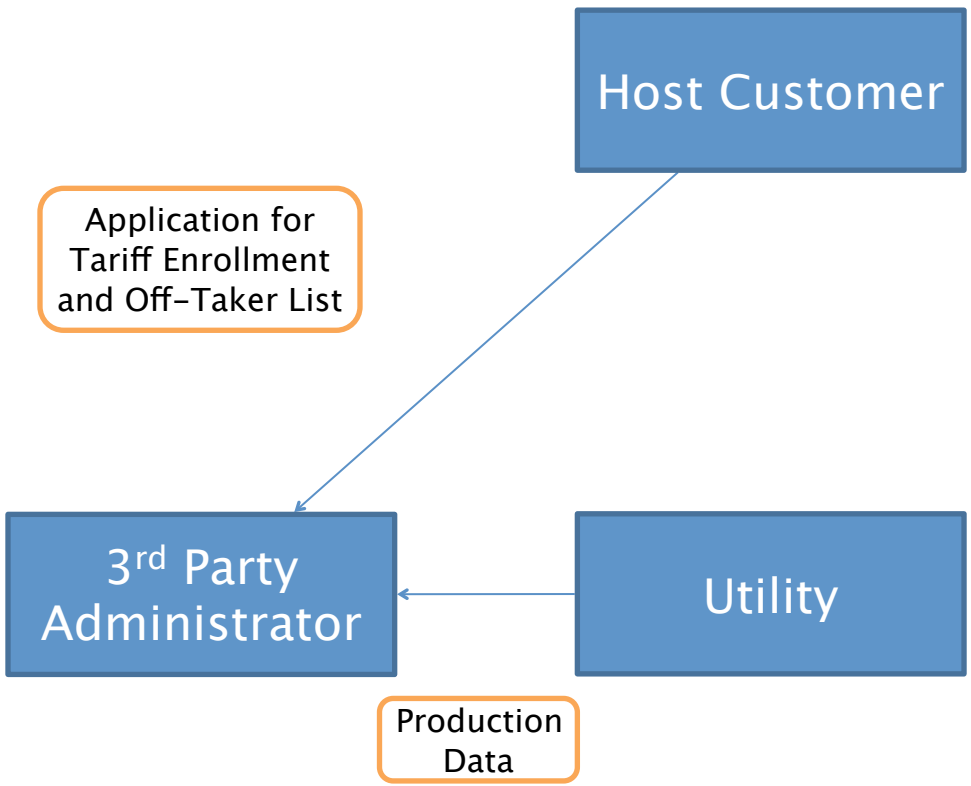

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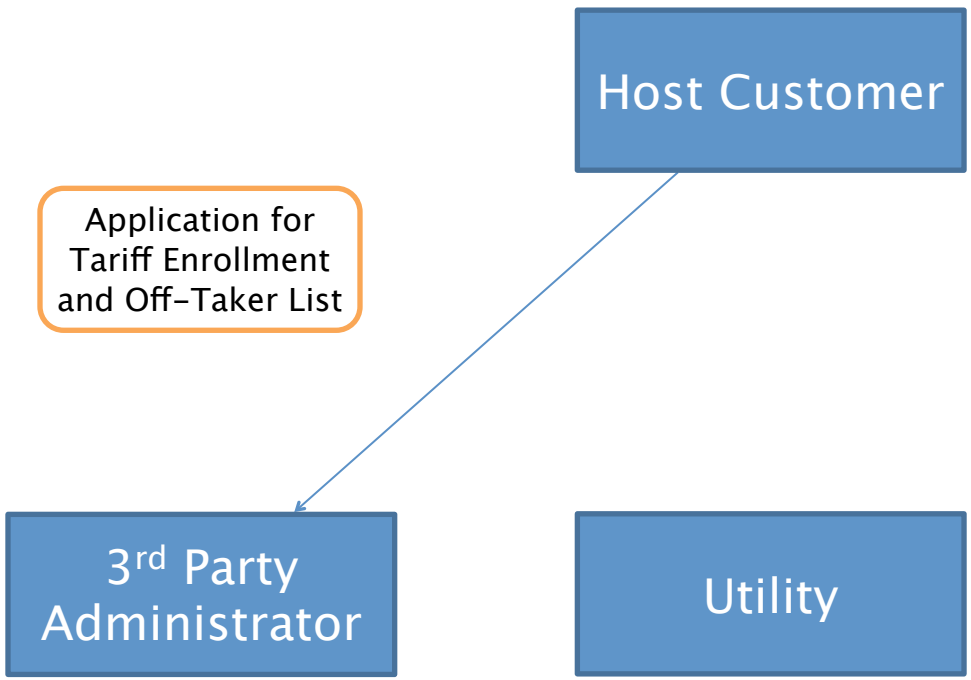

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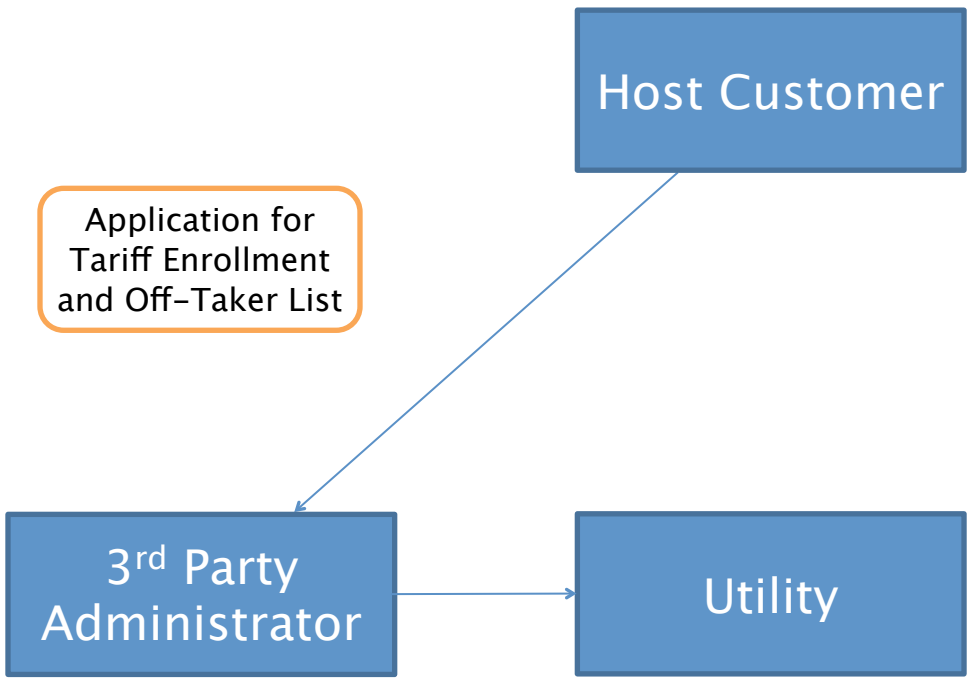

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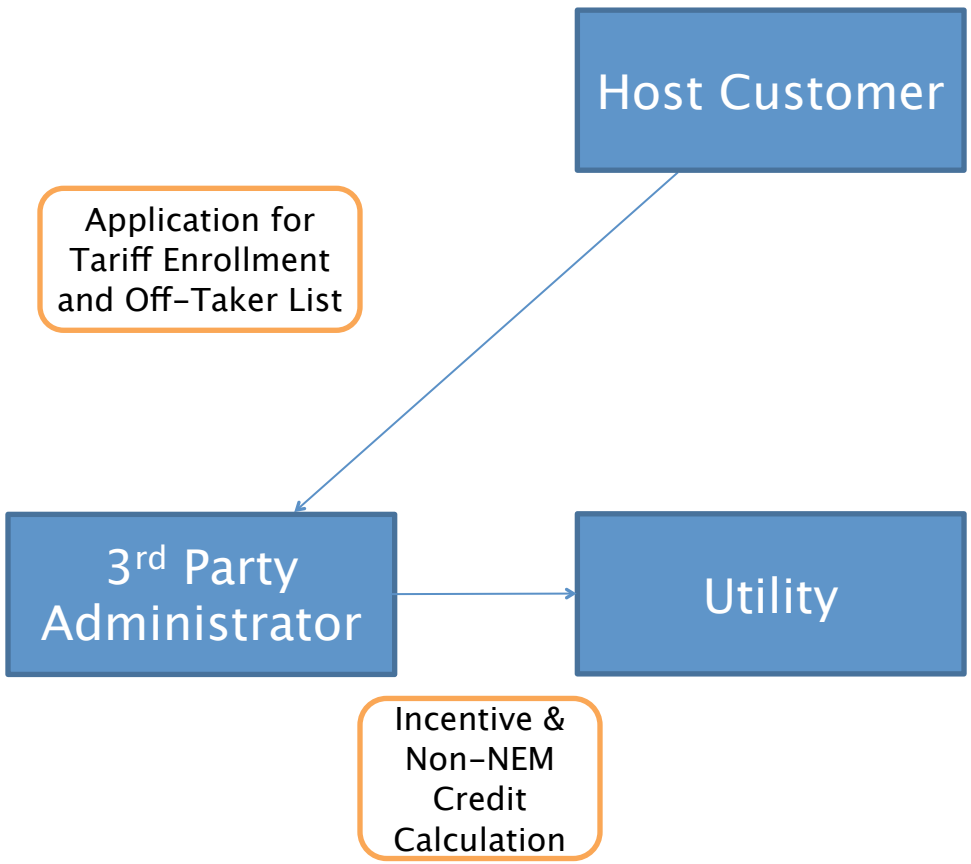

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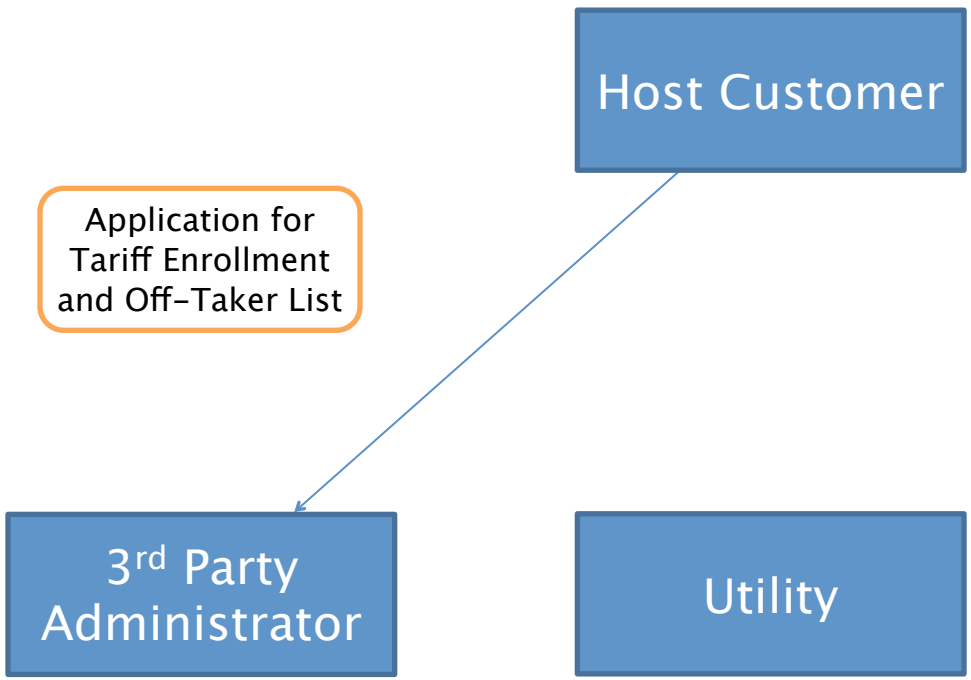

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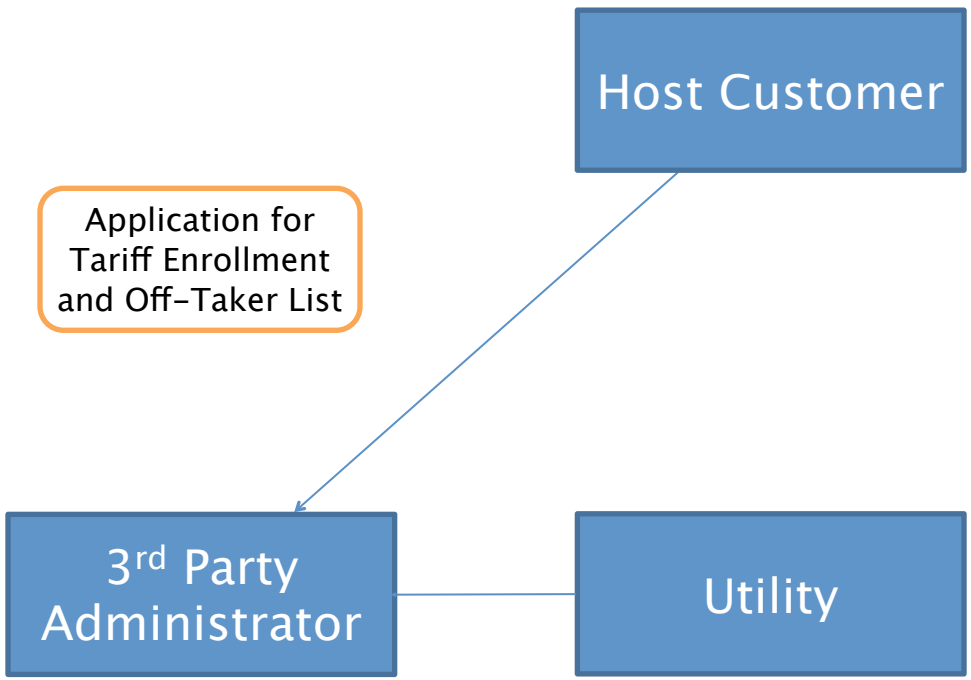

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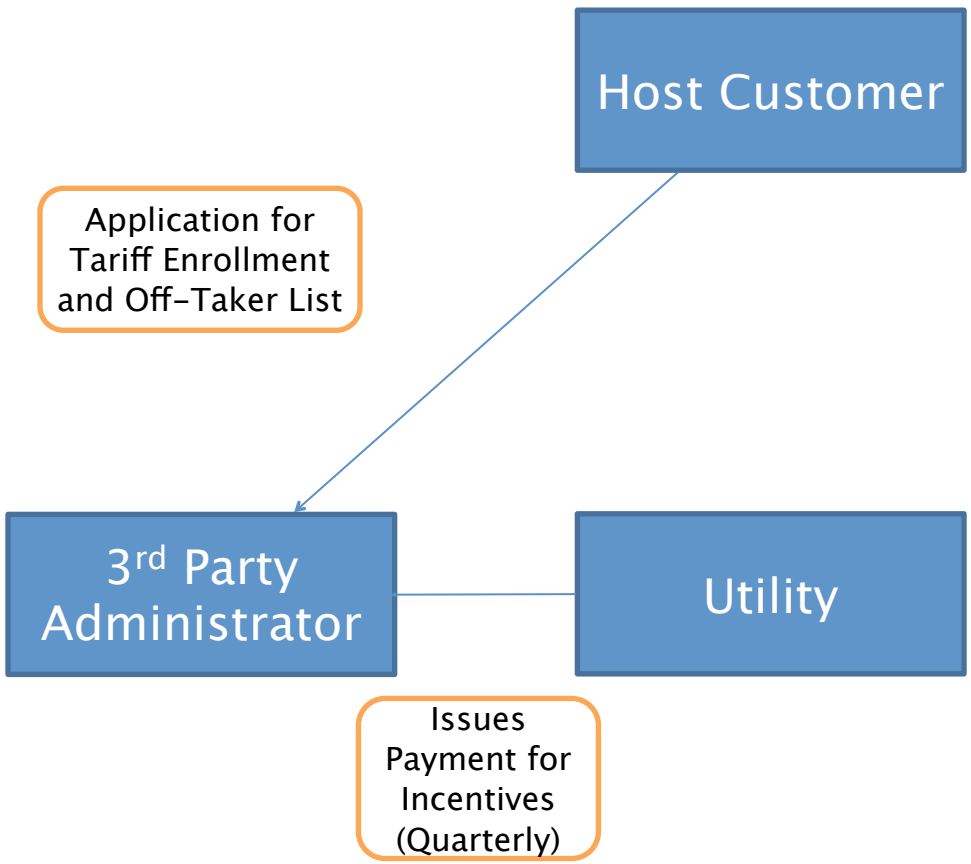

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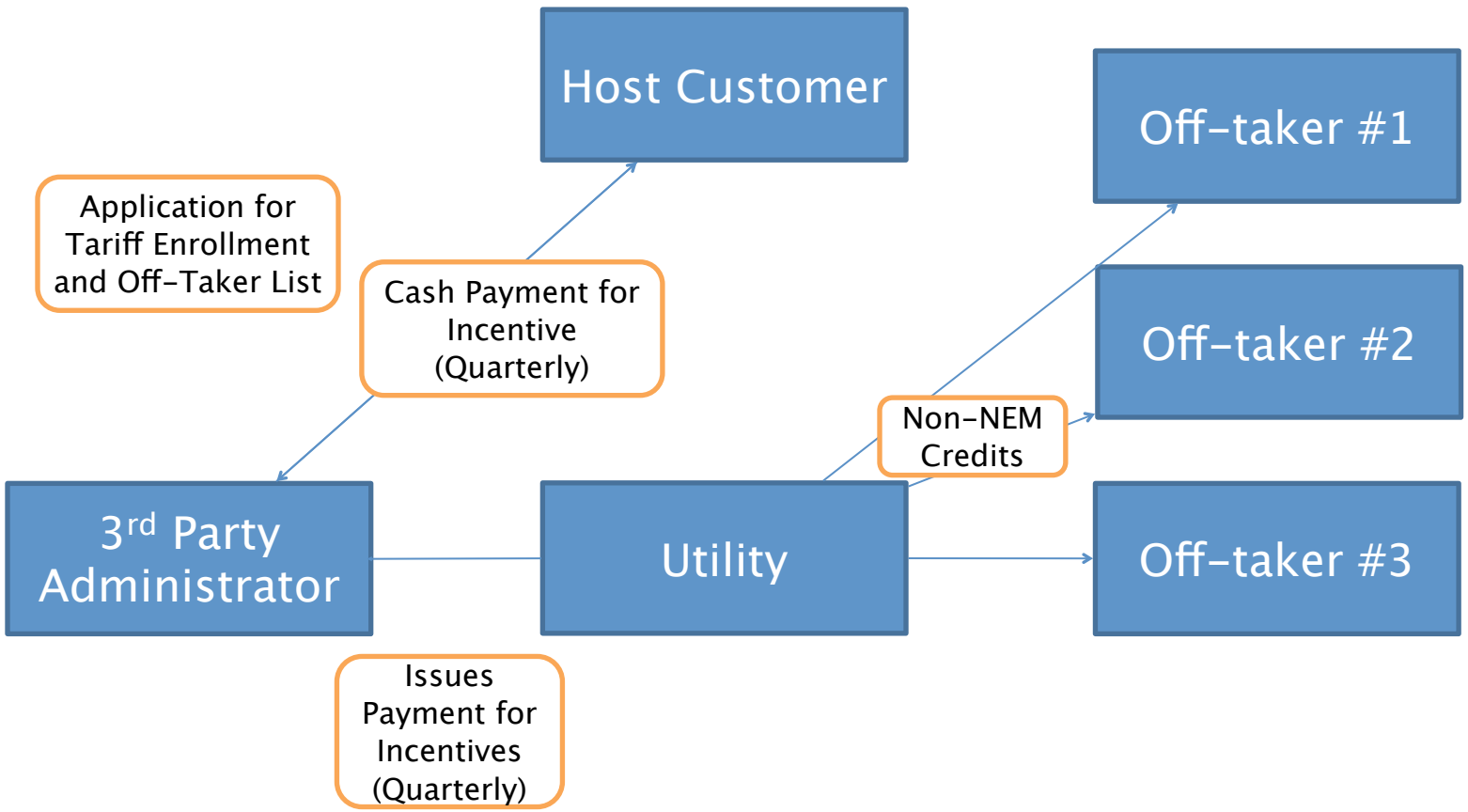

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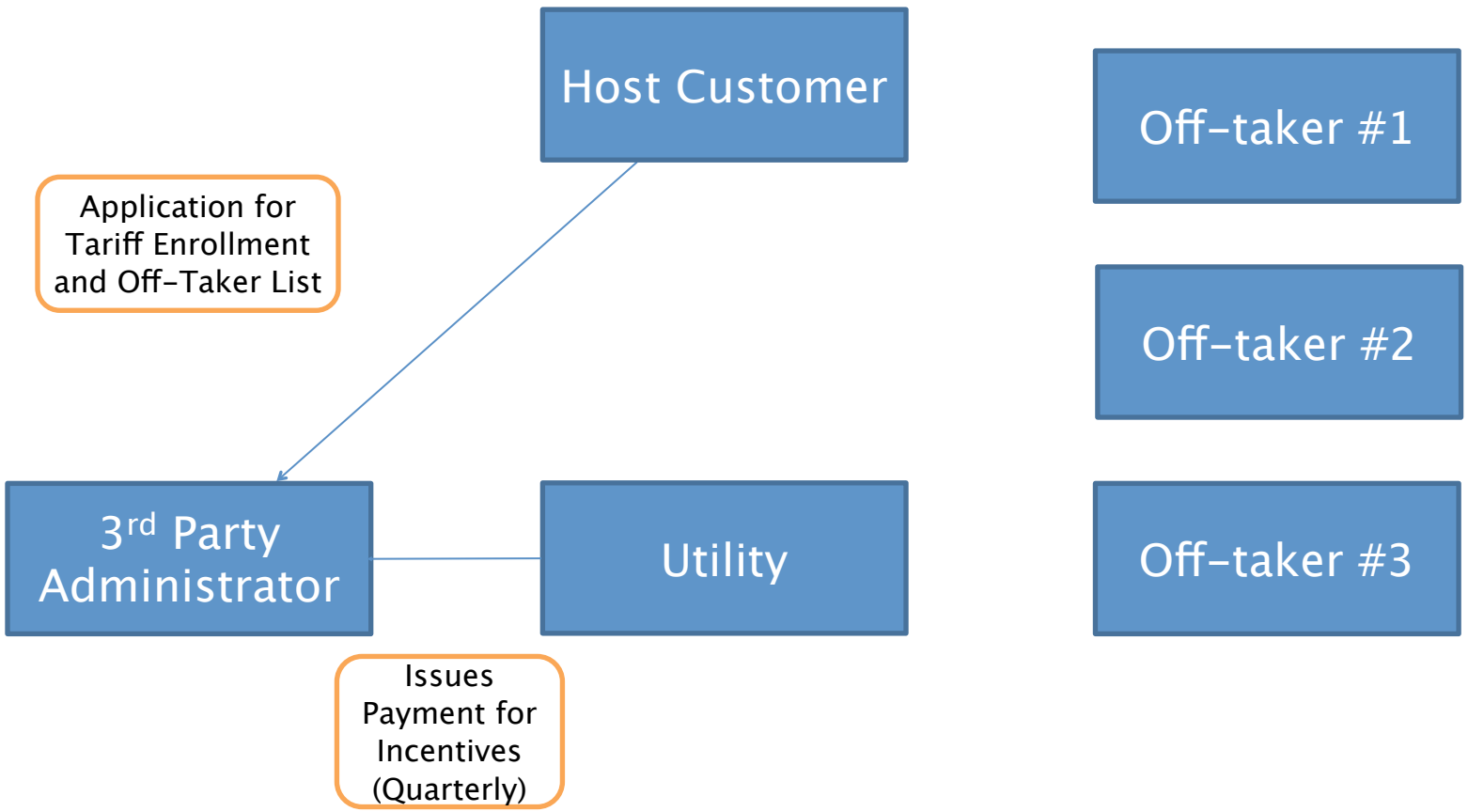

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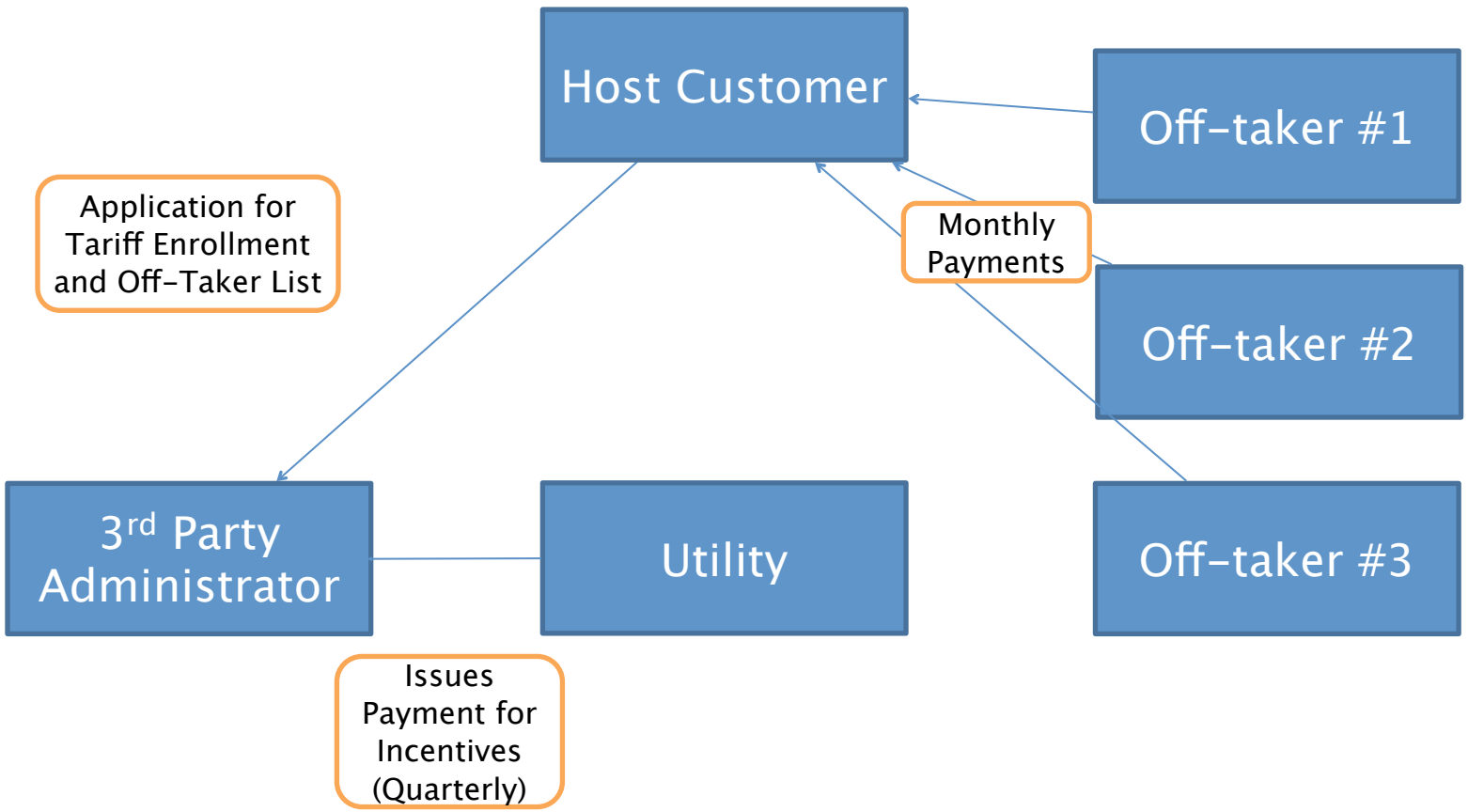

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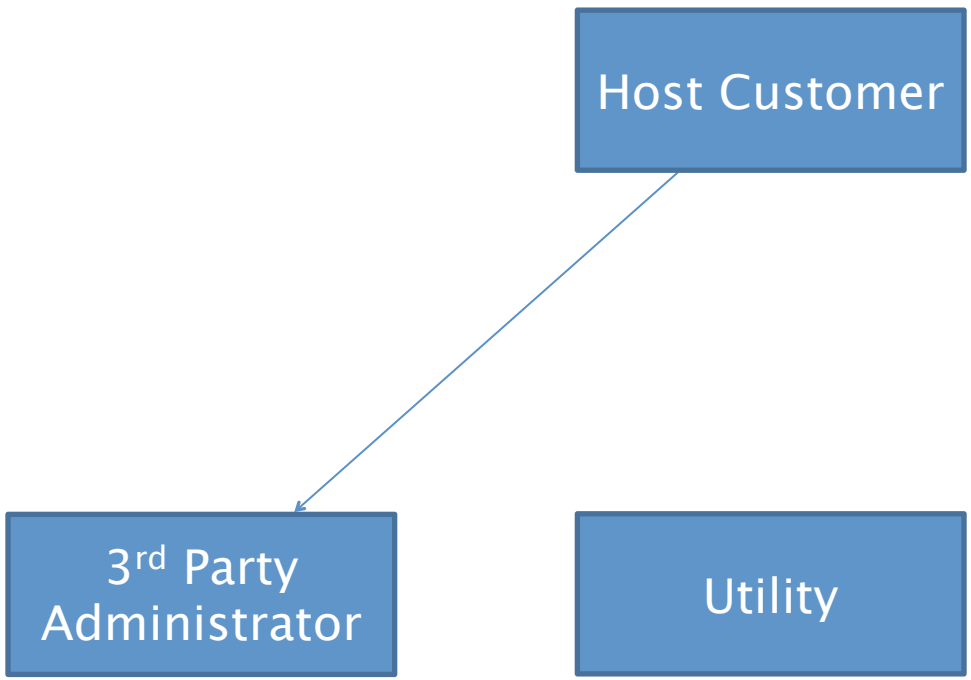
QF Flow Chart

Host Customer

3rd Party Administrator

Utility

QF Flow Chart



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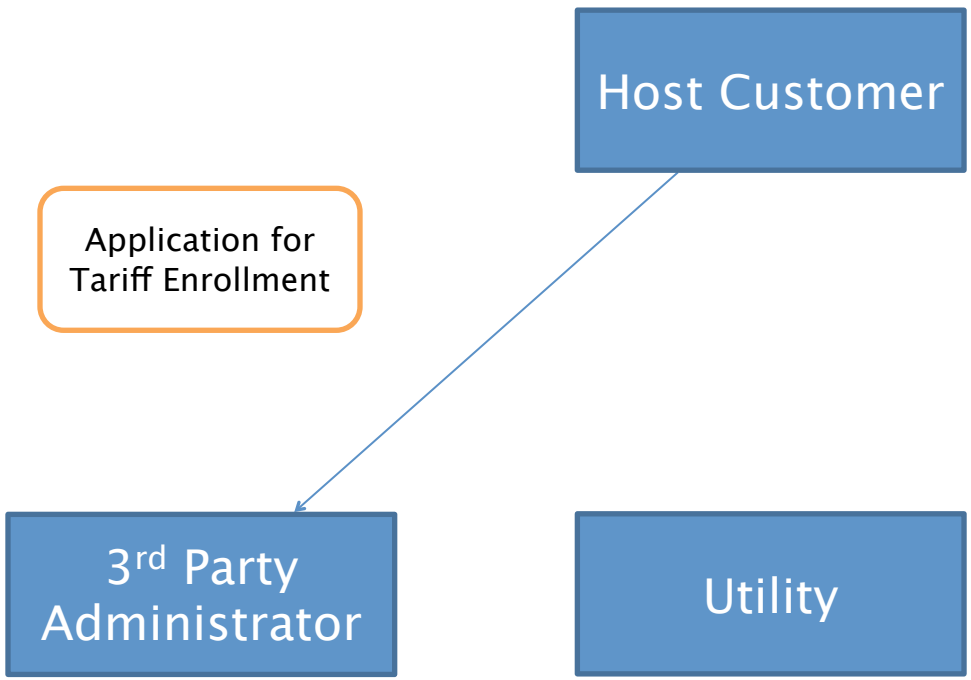

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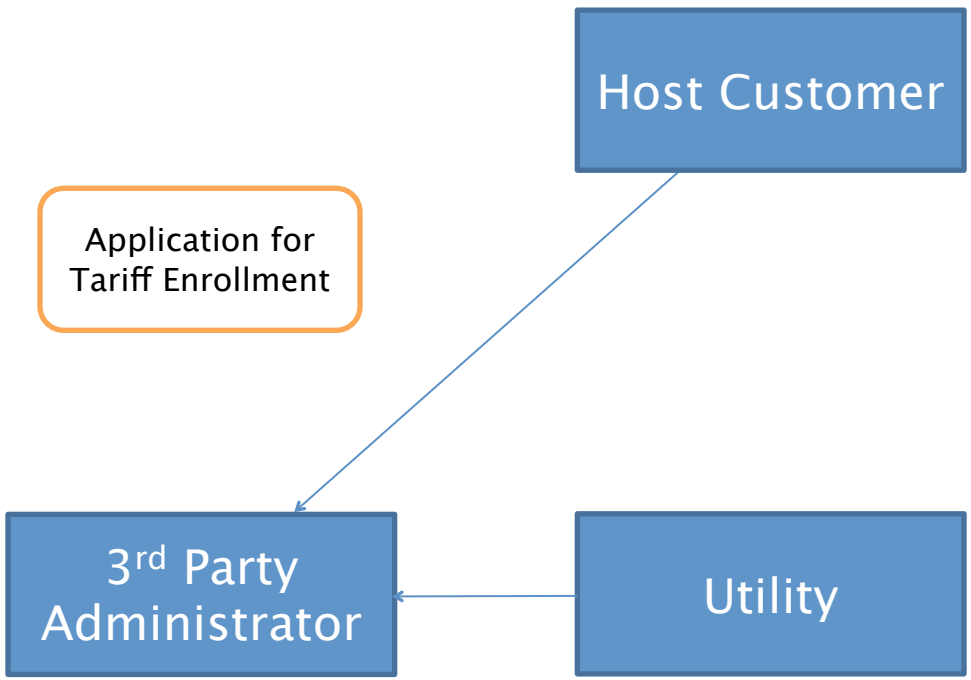

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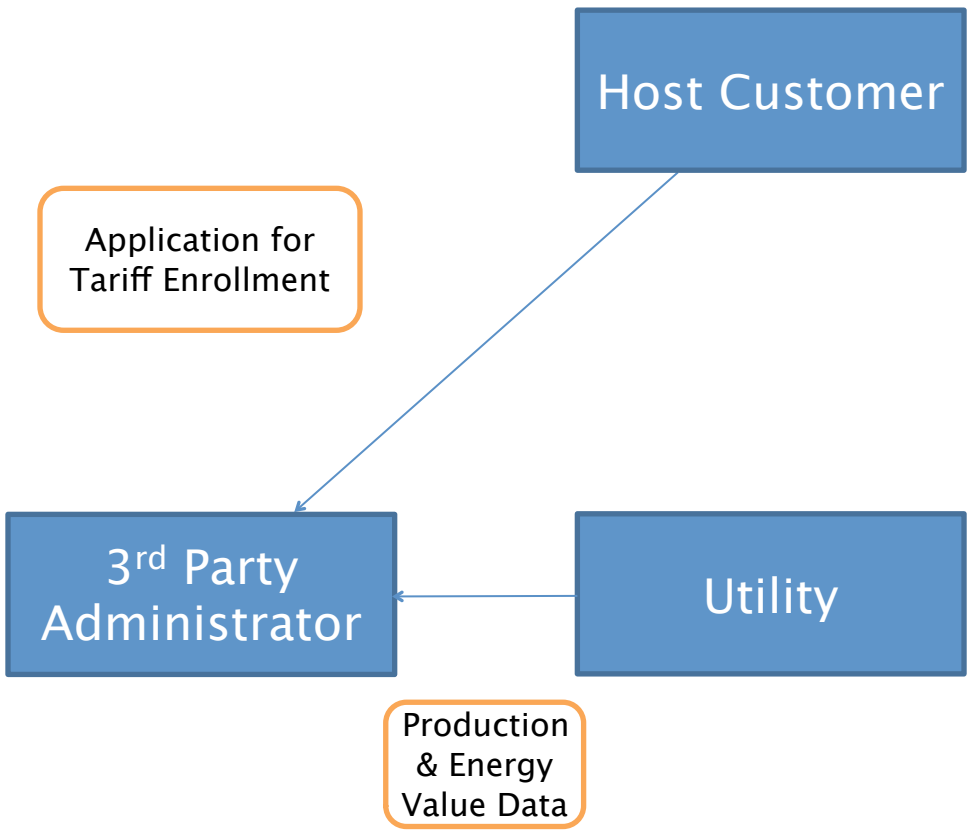

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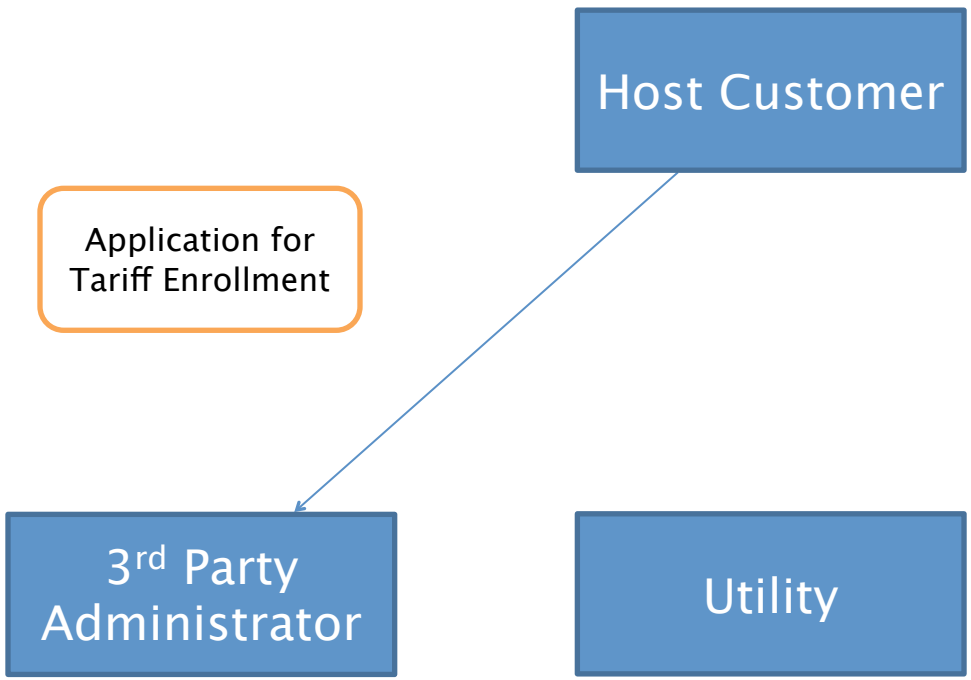

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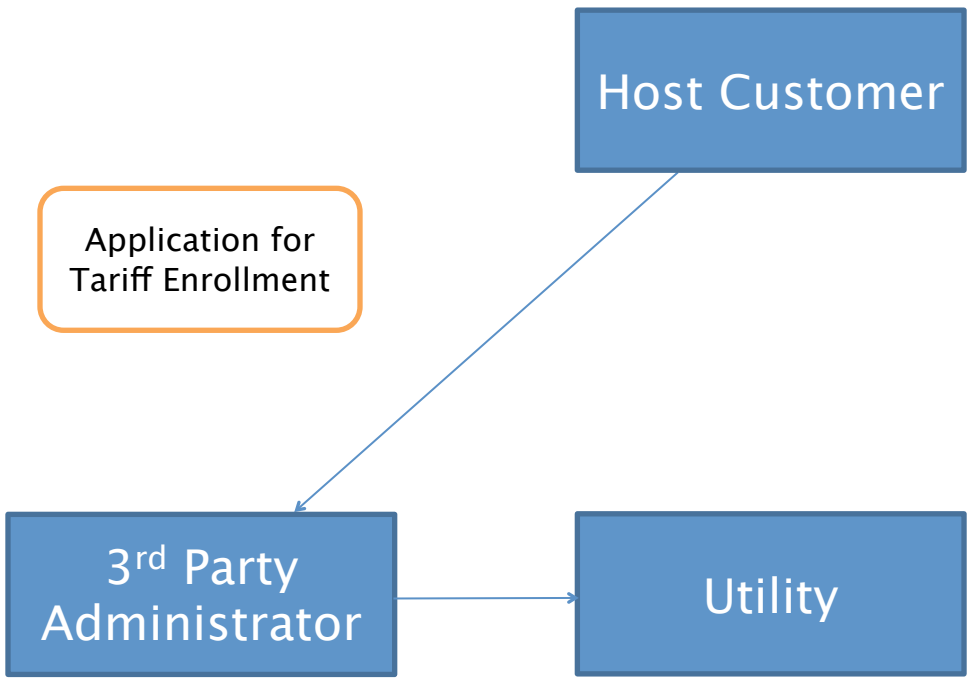

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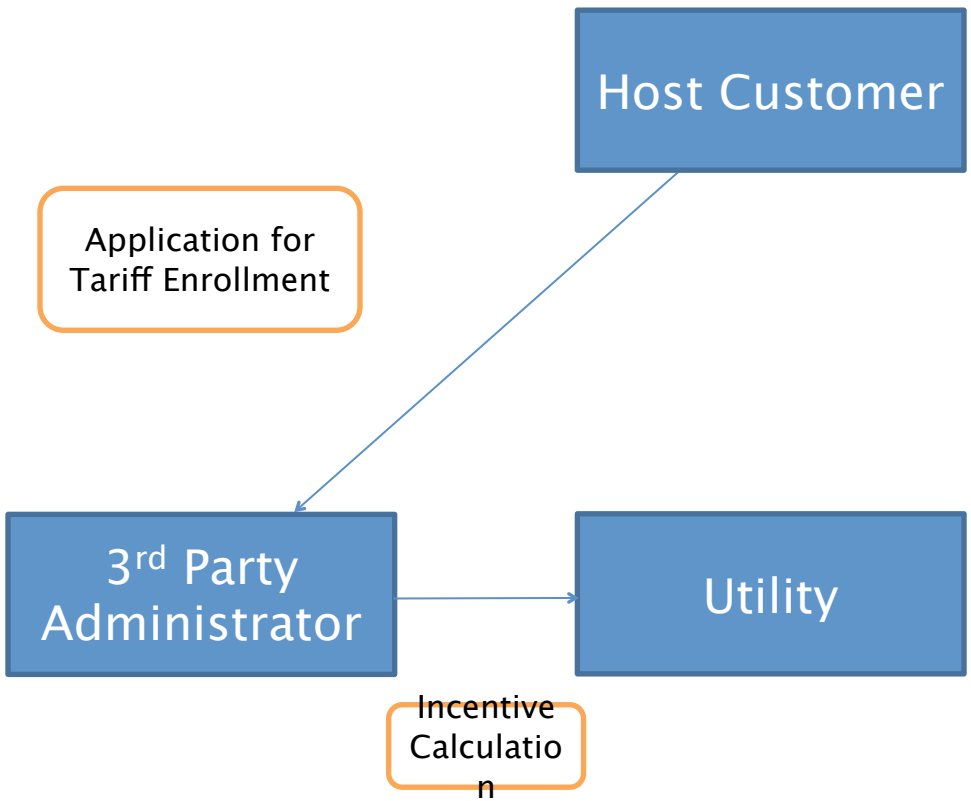

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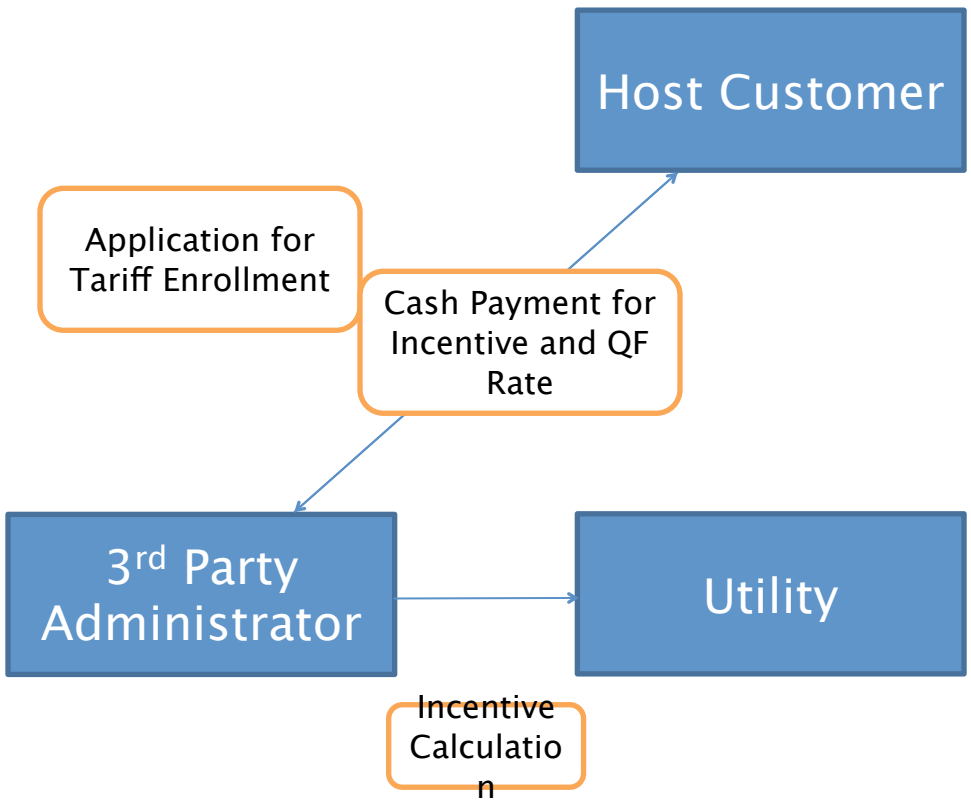


Implementation Questions

- Will need to be part of model tariff filed with DPU
- Is this feasible from a billing perspective?
  - How can the third-party administrator address utility concerns?
- What should the applicable rate be?
  - Basic service minus RPS?
  - Other?
- Should there be a limit on the number of credits that can be allocated?
  - For example, should annual kWh consumption determine the number of credits that a customer can receive? Or can customer have as many credits allocated as they want?
- Will credits carry forward indefinitely? Can they be cashed out?

Summary of Proposed Changes to

- Tariff term lengths for projects >25 kW increased from 15 to 20-years
- Base rates reduced
- Non-net metering adder removed
- $0.02/kWh adder for public projects proposed
- Other adders modified
- Tariff rates differentiated between sized-to-load and standalone systems
  - Sized-to-load systems are any that are designed to meet 125% or less of the on-site load (three-year historical average or projections if data not available)
  - Standalone systems are those designed to meet more than 125% of the on-site load
- Sized-to-load system wills receive flat tariff rates that do not take into account value of energy (i.e. no netting of energy value to determine incentive)
- Standalone systems will still receive incentive payments equal to the net value after energy value has been netted

Additional Information

- Rates and adders were determined using values found in the "Effective Incentive Requirement" workbook produced by Sustainable Energy Advantage for DOER
- SEA's modeling was used to derive all tariff rates with the exception of the building mounted, public, and storage adders
- The specific incentive requirement values used to derive the rates will be detailed in publicly provided workbook that will be posted to DOER's website
- Building mounted and public adders are not necessarily reflective of incremental costs identified by SEA (although DOER believes that many such projects do cost incrementally more), but are reflective of DOER's overall policy objectives of encouraging rooftop solar and public projects
- Storage adders were derived using cost/benefit data

Illustrative Tariff Values for

Capacity Based Tariff Rates (kW AC)		
System Capacity	**Incentive ($/kWh)**	**Term Length**
Less than or equal to 25 kW AC (Low Income) [1]	$0.34	10-year
Less than or equal to 25 kW AC	$0.29	10-year
>25 – 250 kW AC	$0.23	20-year
>250 – 1,000 kW AC	$0.17	20-year
>1,000 – 5,000 kW AC	$0.14	20-year

1. Must be an R-2 customer to qualify

Note: These are proposed values and are not necessarily indicative of final tariff rates

Illustrative Tariff Values for Sized-

Capacity Based Tariff Rates (kW AC)		
System Capacity	**Incentive ($/kWh)**	**Term Length**
Less than or equal to 25 kW AC (Low Income) [1]	$0.15	10-year
Less than or equal to 25 kW AC	$0.10	10-year
>25 – 250 kW AC	$0.05	20-year
>250 – 1,000 kW AC	$0.05	20-year
>1,000 – 5,000 kW AC	$0.05	20-year

1. Must be an R-2 customer to qualify

Note: These are proposed values and are not necessarily indicative of final tariff rates

Illustrative Tariff Adder Values

Location Based Adders	
Type	**Adder Value ($/**
Building Mounted	$0.02
Brownfield	$0.03
Landfill	$0.04
Solar Canopy	$0.06

Off-taker Based Adders	
Type	**Adder Value ($/**
Public Entity	$0.02
Community Shared Solar	$0.06
Low Income Property	$0.03
Low Income CSS [1]	$0.08

Policy Based Adders	
Type	**Adder Value ($/**
Storage + PV	Variable

1. Must be at least 50% R-2 off-takers

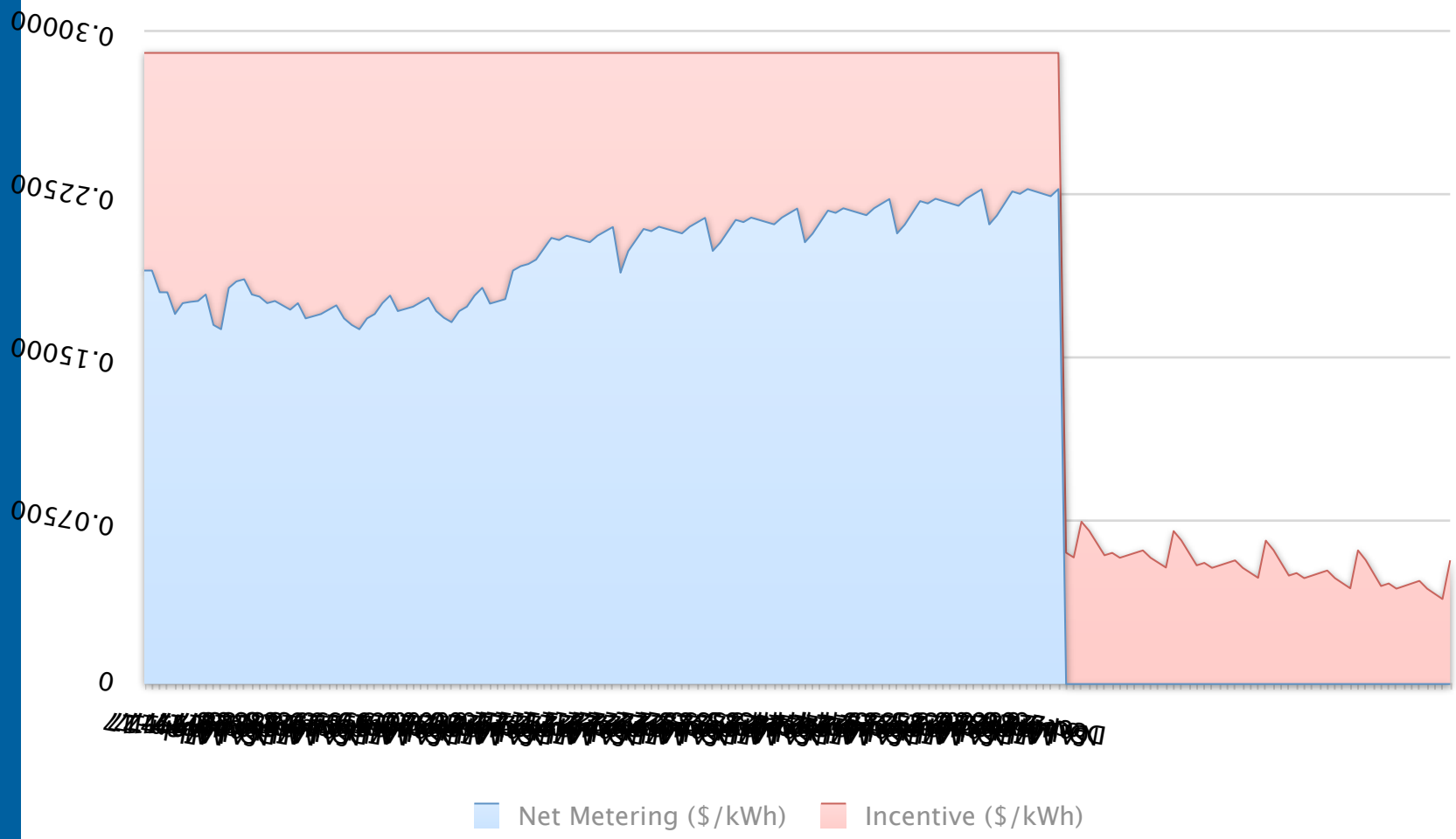
Note: These are proposed values and are not necessarily indicative of final tariff rates

Solar + Storage Adder

- After reviewing Public Comments and Storage Stakeholder Discussions, DOER has created a proposed formula for a Storage Adder
- Adder is determined based on ratio of Power (kW) and energy (kWh, duration)
- Incentive levels were derived from State of Charge report data and represent values that address the revenue gap for storage projects, but deliver storage at a net benefit to ratepayer

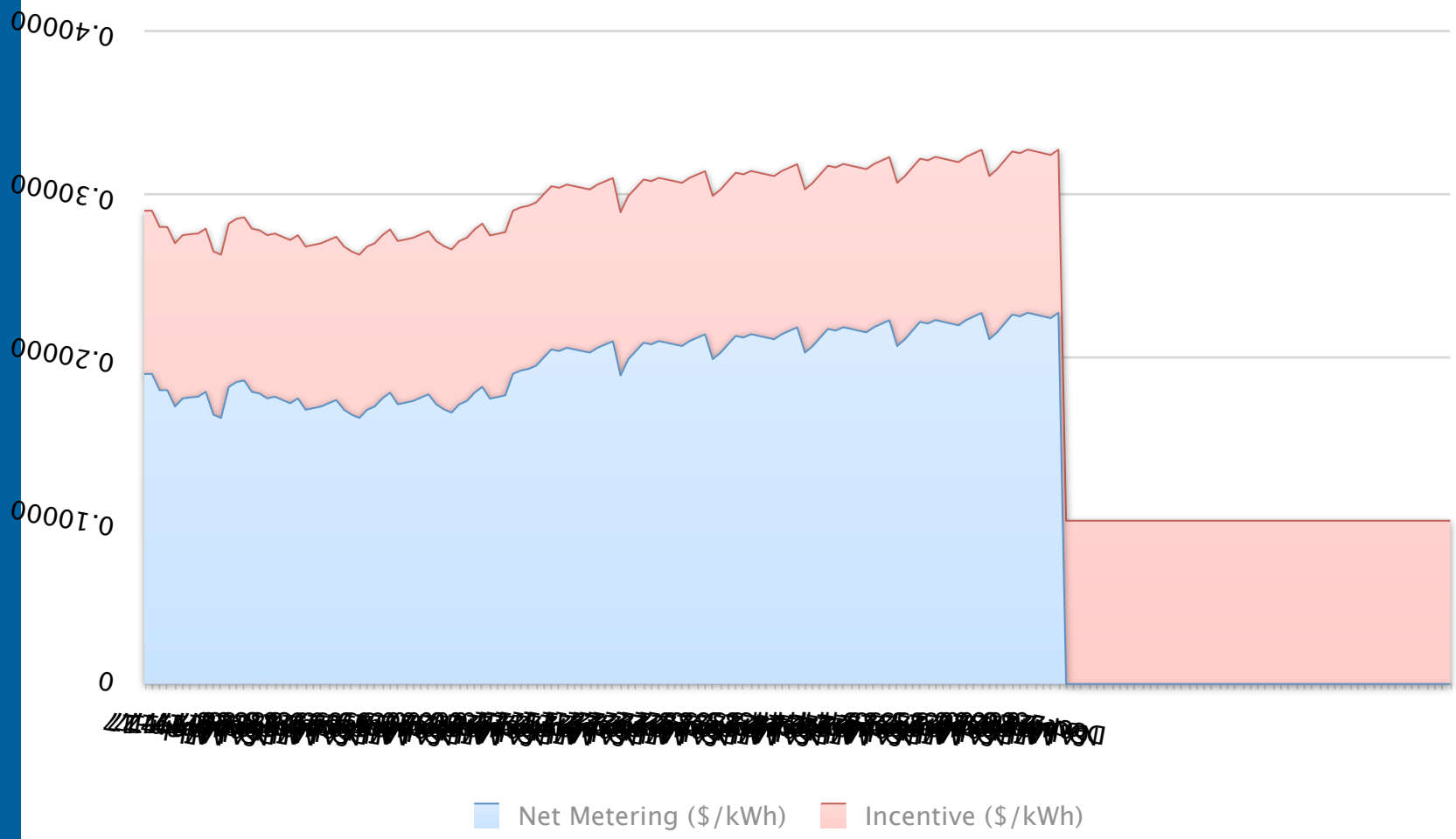
	Storage Hours @ Rated Capacity								
	Minimum								Maximu
Storage kW as % of	2	2.5	3	3.5	4	4.5	5	5.5	6
25%	0.0274	0.0301	0.0323	0.0341	0.0357	0.0371	0.0384	0.0395	0.0406
30%	0.0356	0.0391	0.0419	0.0443	0.0464	0.0482	0.0499	0.0513	0.0527
35%	0.0425	0.0466	0.0500	0.0528	0.0553	0.0575	0.0594	0.0612	0.0628
40%	0.0476	0.0522	0.0560	0.0592	0.0619	0.0644	0.0666	0.0686	0.0704
45%	0.0511	0.0561	0.0601	0.0635	0.0665	0.0691	0.0715	0.0736	0.0756
50%	0.0534	0.0586	0.0628	0.0664	0.0695	0.0723	0.0747	0.0769	0.0790
55%	0.0549	0.0602	0.0646	0.0683	0.0714	0.0743	0.0768	0.0791	0.0811
60%	0.0558	0.0612	0.0657	0.0694	0.0727	0.0755	0.0781	0.0804	0.0825
65%	0.0564	0.0619	0.0663	0.0701	0.0734	0.0763	0.0789	0.0812	0.0834
70%	0.0567	0.0622	0.0668	0.0706	0.0739	0.0768	0.0794	0.0817	0.0839
75%	0.0569	0.0625	0.0670	0.0708	0.0742	0.0771	0.0797	0.0821	0.0842
80%	0.0571	0.0626	0.0672	0.0710	0.0743	0.0773	0.0799	0.0823	0.0844
85%	0.0572	0.0627	0.0673	0.0711	0.0745	0.0774	0.0800	0.0824	0.0846
90%	0.0572	0.0628	0.0674	0.0712	0.0745	0.0775	0.0801	0.0825	0.0847
95%	0.0573	0.0628	0.0674	0.0712	0.0746	0.0775	0.0802	0.0825	0.0847
100%	0.0573	0.0629	0.0674	0.0713	0.0746	0.0775	0.0802	0.0826	0.0847

Small System Tariff



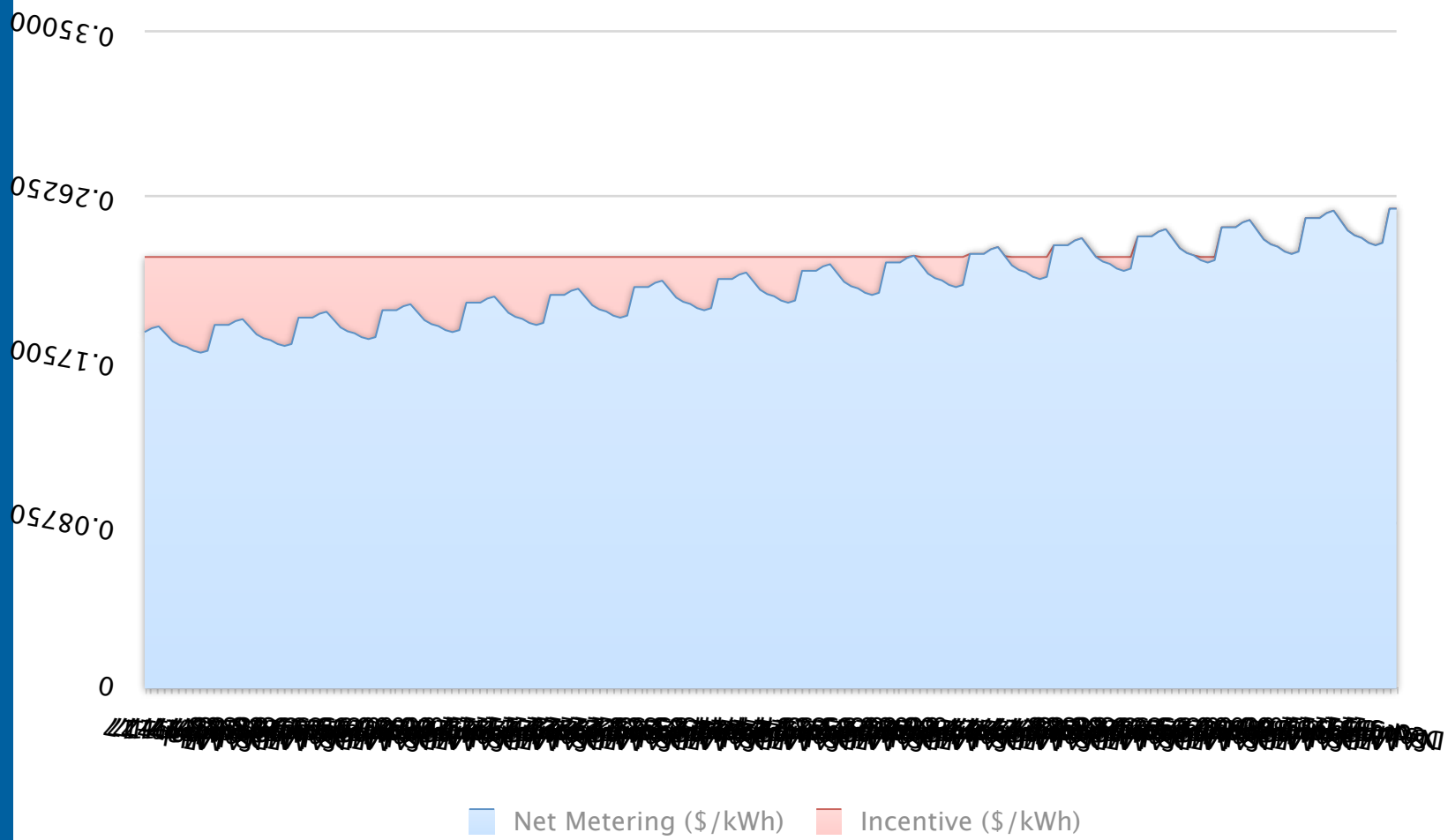
Note: Graph is illustrative of how tariff payments would be determined and does not reflect projected values

Small System Tariff



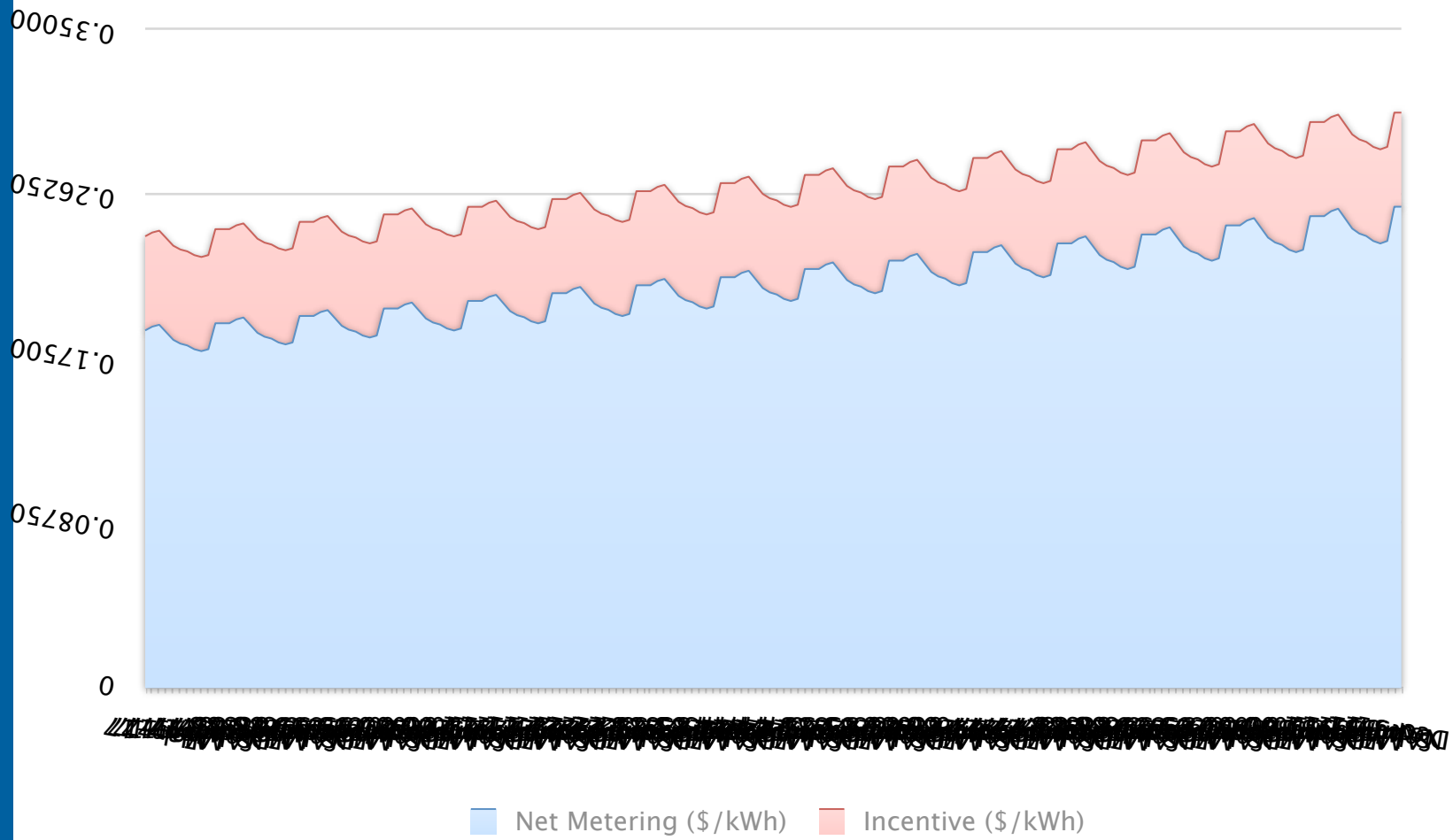
Note: Graph is illustrative of how tariff payments would be determined and does not reflect projected values

Medium System Tariff (w/NEM)



Note: Graph is illustrative of how tariff payments would be determined and does not reflect projected values

Medium System Tariff (w/NEM)



Note: Graph is illustrative of how tariff payments would be determined and does not reflect projected values