



Generator Interconnection Reform Strategy

April 15, 2021

Stakeholder Meeting Agenda

Topic	Presenters	Time
Introductions & Logistics	Dominion Energy	9:00 – 9:10
Overview of Dominion Energy's Queue Reform Initiative, High-level Agenda	Dominion Energy	9:10 – 9:30
DISIS Cluster Study Processes	Dominion Energy	9:30 – 10:15
Break		10:15 – 10:30
Transitional Process & Informational Study	Dominion Energy	10:30 – 11:15
Cost Allocation Examples	Guidehouse	11:15 – 11:30
Open Discussion and Next Steps	All	11:30 – Noon

Act 62 Review Of Standards For Interconnection

Two Phases

- **Phase 1 – Cluster Studies** (applies to both SC State Standard and FERC OATT)
 - Establish an alternative queue process for studying certain large generators requesting interconnection. To be used for both FERC and State jurisdictional projects. (3 stakeholder meetings)
- **Phase 2 – Everything else** (applies to only SC State Standard)
 - Revise the other portions of the SCGIP. According to the September 15, 2020, filing, these revisions would be proposed by the Duke Utilities, DESC, the Solar Intervenors, and potentially other interested parties, after a series of stakeholder meetings (yet TBD) to seek consensus on proposed reforms.

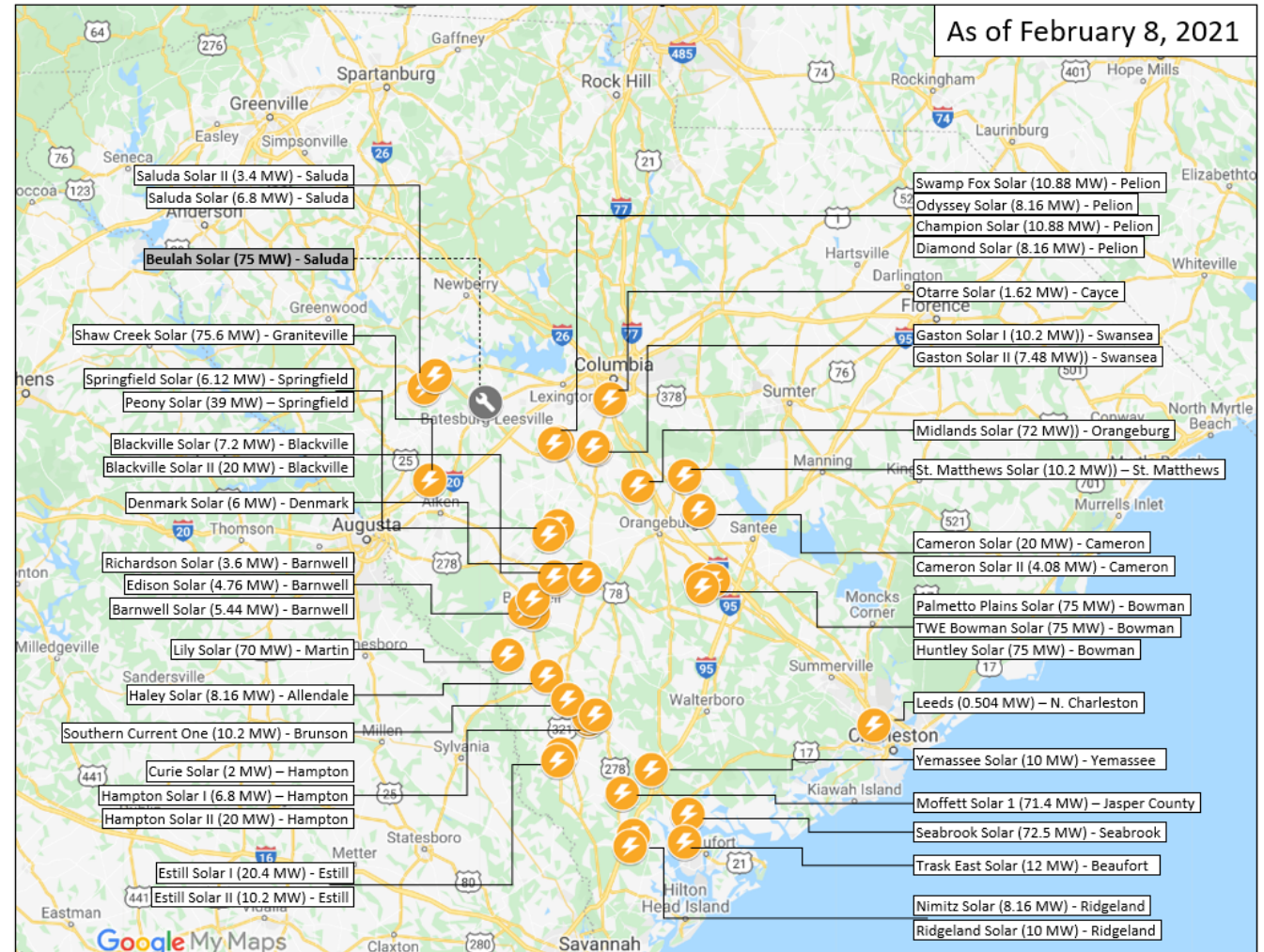
Welcome – Implement Cluster Study option

Stakeholder Meeting 2 of 3

- DESC internal groups working on this effort include:
 - Transmission Planning
 - Tariff Administration
 - Renewables
 - Regulatory Affairs
 - Legal
- DESC has engaged Guidehouse to help with evaluation/design of changes and with Stakeholder meetings.
- DESC invited wide range of stakeholders: Interconnection Customers from State and FERC queue, active facility owners >20 kW, intervenors in SCPSC Docket 2019-326-E, FERC transmission customers and select others like the SCSBA.
- Proposed language has been distributed. Check email inbox.

Utility-Scale Solar-898 MW

- 40 Solar Farms In-Service
 - 14 Transmission
 - 27 Distribution
 - 2 Solar Farms under Construction



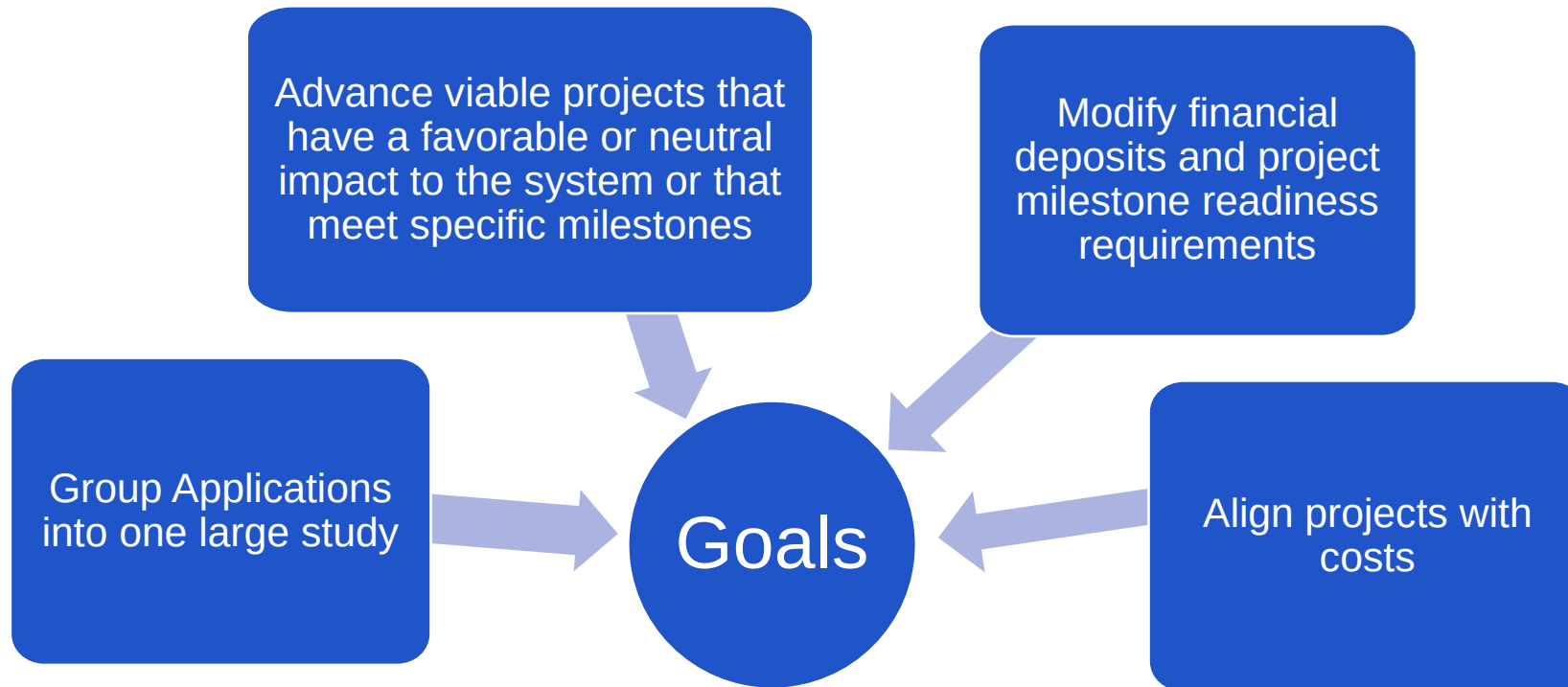
Current Processes

- DESC administers:
 - Small Generator Interconnection Procedure (SGIP – FERC jurisdictional)
 - Large Generator Interconnection Procedure (LGIP – FERC jurisdictional)
 - South Carolina Generator Interconnection Procedure (SCGIP – State jurisdictional)
- The generator's intent for its output dictates the jurisdiction
- DESC utilizes a serial study process based on first-in, first-studied, regardless of jurisdiction
- The project that triggers an upgrade is responsible for the upgrade
- DESC has processed 250 projects 1 MW or less in size
- DESC has received 284 projects greater than 1 MW in size (total 12,750 MW)
 - 71 projects (total 7,012 MW) remain in process
 - 58 projects (total 826 MW), have executed interconnection agreements and later withdrawn from the queue

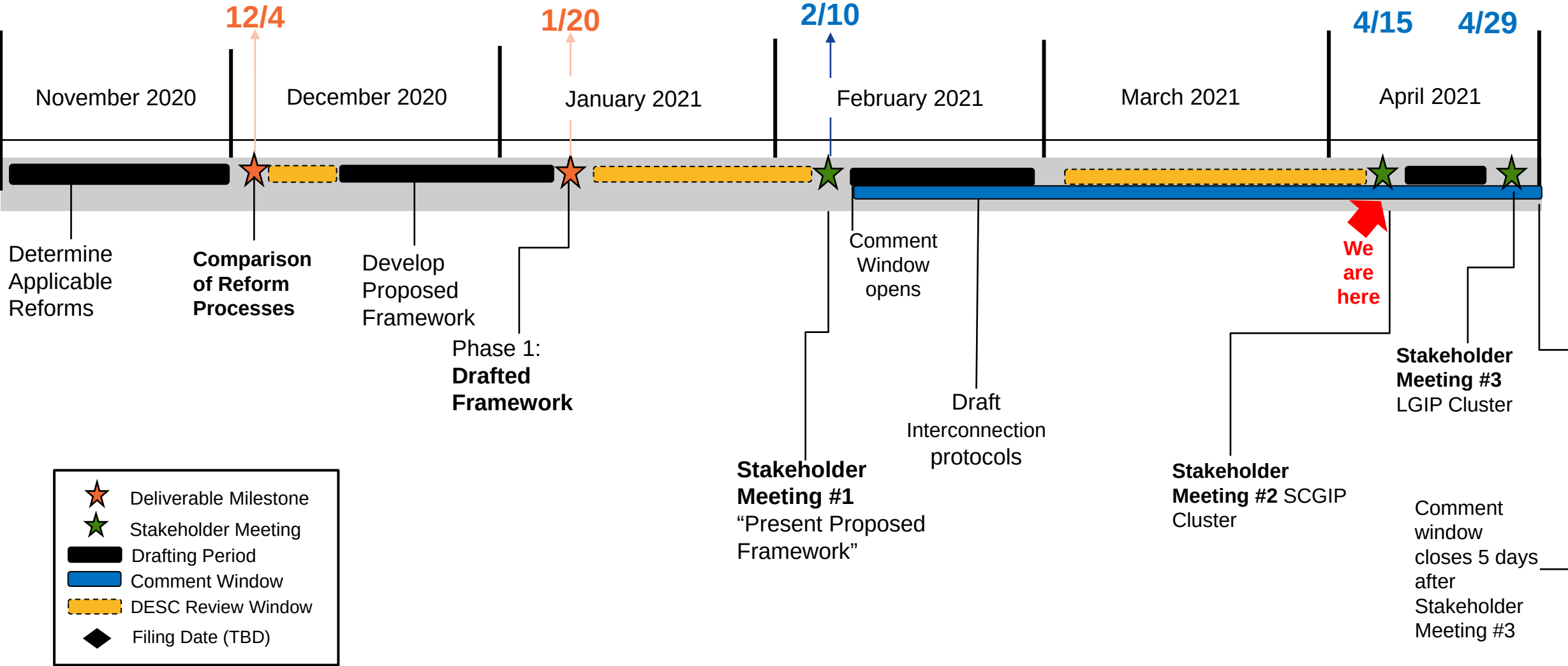
Phase 1 - Proposed Improvements

Cluster Studies

- Dominion Energy South Carolina, Inc. is adding an optional Cluster Study process to its generation interconnection process.



2020-2021 Queue Reform Stakeholder Process Timeline*



*This timeline may be adjusted based on filing requirements

Definitive Interconnection Study Process

Definitive Interconnection Study Process Overview

One Definitive Interconnection System Impact Study (DISIS) cluster study per year

Study steps:

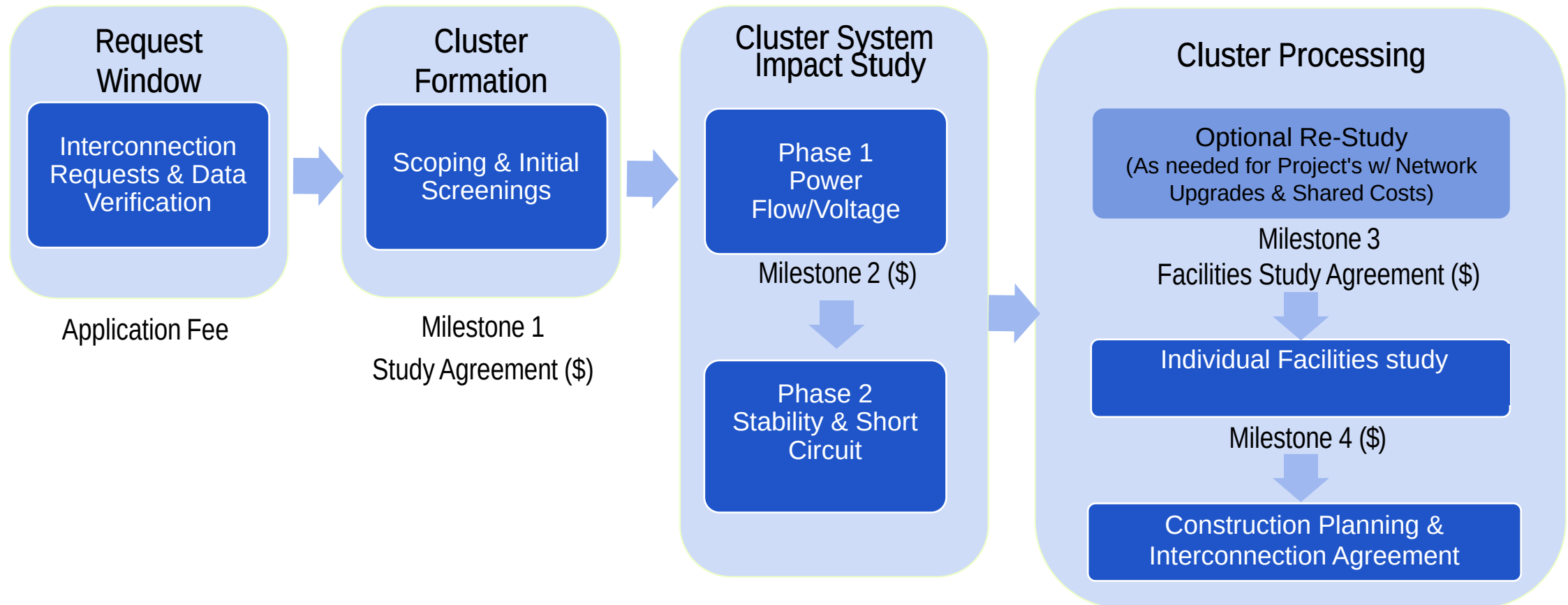
1. Interconnection Request Window
2. Customer Engagement Window
3. Study process
4. GIA



Definitive Interconnection Study Process

Goal: Timely interconnection of ready projects

1. First-ready, first-served Definitive Interconnection System Impact Study Process (DISIS) with increasing milestones required to stay in the queue



Request Window - Interconnection Requests & Data Verification

Enter

- Interconnection Request and technical specs
- Site control
- Study Deposit
 - (1) \$10,000 plus one dollar (\$1.00) per kWac of capacity specified in the Interconnection Request Application Form for all Interconnection Requests 1 MW or less
 - (2) \$20,000 plus one dollar (\$1.00) per kWac of capacity specified in the Interconnection Request Application Form for all Interconnection Requests greater than 1 MW and less than 20 MW
 - (3) \$35,000 plus one dollar (\$1.00) per kWac for Interconnection Requests between 20 MW and 50 MW
 - (4) \$50,000 plus one dollar (\$1.00) per kWac for all Interconnection Requests greater than 50 MW
- Deposit is intended to cover DESC cost of overheads for conducting the DISIS studies and Facility study. Additionally, the deposit shall be applied towards DESC admin cost, as well as any upgrades and interconnection facilities.

During

- DESC may request additional technical information from the Interconnection customer(IC)
- If DESC determines that the technical information provided is not adequate, DESC shall provide to the IC written list detailing all information that must be provide within 10 business days where the IC failure to provide the information required by DESC within the deadline will result in the Interconnection request being deemed withdrawn.

Exit

- DESC shall post on the Utility's website a list of Interconnection Requests for that Cluster, identifying for each Interconnection Request:
 - I. the Cluster the Interconnection Request is in;
 - II. the location by county;
 - III. the distribution or transmission substation or transmission line or lines where the interconnection will be made;
 - IV. The type of Generating Facility to be constructed including fuel type such as wind, natural gas, coal, or solar.

Cluster Formation - Scoping & Initial Screenings

Enter

- Scoping Meeting within 20 Business Days of the end of the Verification Window
- Discuss and determine primary POI
- IC can select an alternate POI

During

- DESC shall work with the participating IC to build models, verify data, hold individual meetings (if requested), cure any deficiencies in the Interconnection Request, and generally prepare for the start of the Definitive Interconnection System Impact Study (DISIS)
- DESC shall provide to each IC proposing to enter the DISIS Cluster a non-binding updated good faith estimate of the cost and timeframe for completing the Definitive Interconnection System Impact Study

Exit

- At the end of the Customer Engagement Window, all Interconnection Requests that meet the foregoing M1 readiness requirements and that have an executed DISIS Agreement shall be included in that DISIS Cluster.
- Any Interconnection Requests not deemed sufficient pursuant to SCGIP at the close of the Customer Engagement Window shall not be included in the commencing DISIS Cluster.
- The IC shall execute the DISIS Agreement and deliver the executed DISIS Agreement to the DESC

Allocation of Study Costs for DISIS Cluster

- The study cost allocation to each IC in a specific Cluster, shall be
 1. Ten percent (10%) on a per capita basis based on number of Interconnection Requests in the applicable Cluster; and
 2. Ninety percent (90%) to IC(s) on a pro-rata basis based on requested megawatts included in the applicable Cluster.
- If IC's exit the cluster prior to Phase 2, DESC will determined the cost of preparing for and completing the DISIS prior to beginning Phase 2
 - DESC then will separately determined each remaining IC cost for the remainder of the DISIS.
- For a Phase 3 re-study DESC will allocate the cost of the re-study amongst the IC's included in the re-study.
 - If an IC proposes nonmaterial changes to the IR requiring a limited re-study, the cost shall be directly assigned to the requesting IC.
- The facilities study shall continue to be an individual study and the cost for each facility study will be directly assigned to the IC associated with the study.

Distribution of DISIS Revenue/Withdrawal Penalty

- Withdrawal Penalty revenues associated with M1-M3 shall be used to fund generation interconnection studies.
- Withdrawn IC(s) shall not receive a bill credit associated with Withdrawal Penalties.
- Distribution of Withdrawal Penalty revenues to a specific study shall not exceed the total actual study costs.
- Specifically, the Withdrawal Penalty revenue distribution to each IC in a specific Cluster, shall be
 1. Ten percent (10%) on a per capita basis based on number of Interconnection Requests in the applicable Cluster; and
 2. Ninety percent (90%) to IC(s) on a pro-rata basis based on requested megawatts included in the applicable Cluster.
- The Utility shall not change the distribution of Withdrawal Penalty revenue without authorization by the Commission.

DISIS Withdrawal Without Penalty

- (1) The withdrawal does not negatively affect the timing or cost to interconnect of equal or lower queued projects; or
- (2) The cost responsibility identified for that Interconnection Customer in the current study report associated with new Network Upgrades to the Transmission Provider's System increased by more than twenty-five percent (25%) compared to the costs identified in the previous report; or
- (3) If the customer withdraws after the Interconnection Facilities Study report is published and before providing the final Milestone Payment, and the cost responsibility for that Interconnection Customer identified in the Interconnection Facilities Study report increases by more than one hundred percent (100%) compared to the prior report.

DISIS - Phase 1 (Power Flow/Voltage)

Enter

- Execute a DISIS Agreement
- Provide initial security equal to 1 times study deposit amount
- Provide evidence satisfactory to the Utility of either an initial Readiness Milestone (M1), or additional security in the form of an irrevocable letter of credit or cash in lieu of the M1 Readiness Milestone
- A contract with term of sale not less than 5 years or inclusion in Resource Plan

During

- Identify the interconnection facilities and system upgrades that are expected to be required as a result of the interconnection request(s)
- Non-binding good-faith indicative level estimate of cost responsibility and a non-binding good-faith estimate time to construct

Exit

- DESC will hold customer engagement window and will host an open stakeholder meeting (Phase 1 report meeting)
- DESC will notify distribution-level IC(s), who will not cause or contribute to network upgrades, in writing that DESC will complete an individual distribution-level system impact study.
- After the issuance of the individual distribution-level system report, the IC would proceed to the Facility study process.
- DESC will publish the results of the DISIS phase 1 results

DISIS - Phase 2 (Stability & Short Circuit)

Enter

- Provide initial security equal to 1 times study deposit amount
- Provide evidence satisfactory to the Utility of either an initial Readiness Milestone (M2), or additional security in the form of an irrevocable letter of credit or cash in lieu of the M2 Readiness Milestone
- A contract with term of sale not less than 5 years or inclusion in Resource Plan

During

- Identify the interconnection facilities and system upgrades that are expected to be required as a result of the interconnection request(s)
- Non-binding good-faith indicative level estimate of cost responsibility and a non-binding good-faith estimate time to construct

Exit

- DESC will hold customer engagement window and will host an open stakeholder meeting (Phase 2 report meeting)
- DESC shall let the IC(s) know if they cluster will go to a re-study or facility study phase.
- If the DISIS cluster is moving to the facility study phase DESC will provide the IC(s) with a facility study agreement.
- If one or more IC(s) withdraws and DESC determines that a re-study is not needed. DESC will provide an updated phase 2 report of such determination.
- If one more IC(s) withdraws and DESC determines that a re-study is needed. DESC will continue with such study until DESC determines that no further re-studies are required.
- DESC will publish the results of the DISIS Phase 2 results

DISIS – Phase 3 Re-Study (If Needed)

Enter

- DESC determined re-study is needed

During

- May consist of updated power flow/voltage analysis, stability analysis, and/or short circuit analysis if necessary, for the IC(s) remaining in the Cluster
- Identify the interconnection facilities and system upgrades that are expected to be required as a result of the interconnection request(s)
- Non-binding good-faith indicative level estimate of cost responsibility and a non-binding good-faith estimate time to construct
- DESC will issue the DISIS Phase 3 report.

Exit

- DESC will hold customer engagement window and will host an open stakeholder meeting (Phase 3 report meeting)
- DESC will publish the results of the DISIS phase 3 results

Cluster Processing - Individual Facilities Study

Enter

- An executed Facilities Study Agreement (executed and including all required data identified therein)
- Provide initial security equal to 1 times study deposit amount
- Provide evidence satisfactory to the Utility of either an initial Readiness Milestone (M3), or additional security in the form of an irrevocable letter of credit or cash in lieu of the M3 Readiness Milestone
- A contract with term of sale not less than 5 years or inclusion in Resource Plan

During

- Identify the interconnection facilities and system upgrades that are expected to be required as a result of the interconnection request(s)
- DESC will issue the facilities study report
- Facilities study report shall specify and estimate the cost of the equipment, engineering procurement and construction work (including overheads) needed to implement the System Impact Studies and to allow the Generating Facility to be interconnected and operated safely and reliably.

Exit

- DESC will publish the results of the DISIS final reports
- DESC if requested, shall make itself available to meet with the individual IC(s)
- IC(s) will proceed to the interconnection agreement and scheduling.

Cluster Processing - Construction Planning & Interconnection Agreement

Enter

- Provide evidence satisfactory to the Utility of either an initial Readiness Milestone (M4), or additional security in the form of an irrevocable letter of credit or cash in lieu of the M4 Readiness Milestone equal to one times the Study Deposit required in Section. Due within 10 Business Days of Facilities Study Report.
- A contract with term of sale not less than 5 years or inclusion in Resource Plan
- The M4 prepayment amount shall be the greater of
 - a) one hundred percent (100%) of the System Upgrade costs identified in the Facilities Study Report that would be borne by the IC under a future Interconnection Agreement or
 - b) a minimum deposit based upon the IC(s) maximum physical export capability*

During

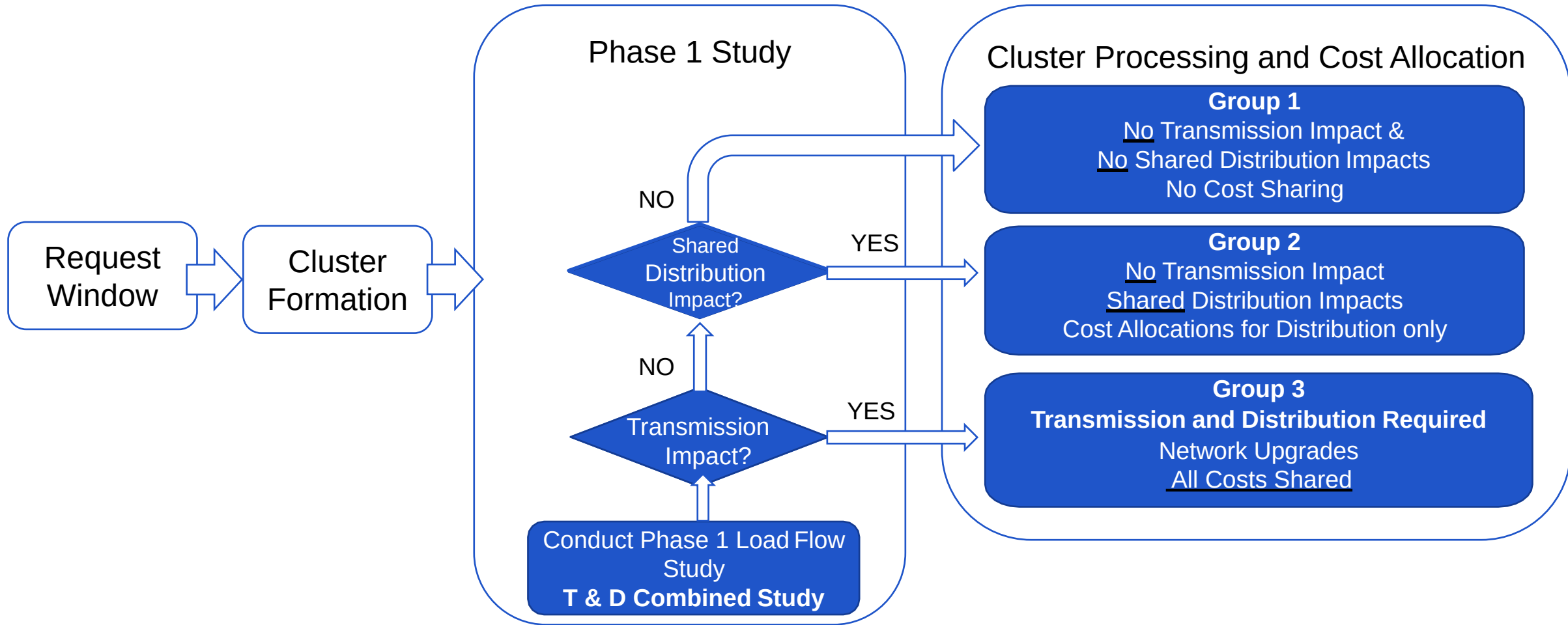
- The construction planning meeting request shall include the IC's reasonably requested date for completion of the construction of the upgrades and interconnection facilities.
- The meeting is to help identify the tasks for each party and discuss and determine the milestones of the construction of the upgrades and interconnection facilities.
- DESC shall provide the executable interconnection agreement.
- The interconnection agreement shall specify milestones and payments for upgrades and interconnection facilities and/or, provisions of financial security for interconnection facilities, if acceptable by DESC. That are required prior to the start of the design and construction of upgrades and interconnection facilities .

Exit

- Execute the interconnection agreement and return to DESC
- Payment and financial security must be received 45 business days after the date the interconnection agreement is delivered to the IC for signature.

* \$100,000 for Interconnection Customers greater than 1 MW up to 5MW;
\$150,000 for Interconnection Customers greater than 5 MW up to 10 MW;
\$200,000 for Interconnection Customers greater than 10 MW up to 20 MW;
\$500,000 for Interconnection Customers greater than 20 MW up to 50 MW, or
\$800,000 for Interconnection Customers greater than 50 MW.

Cost Allocation

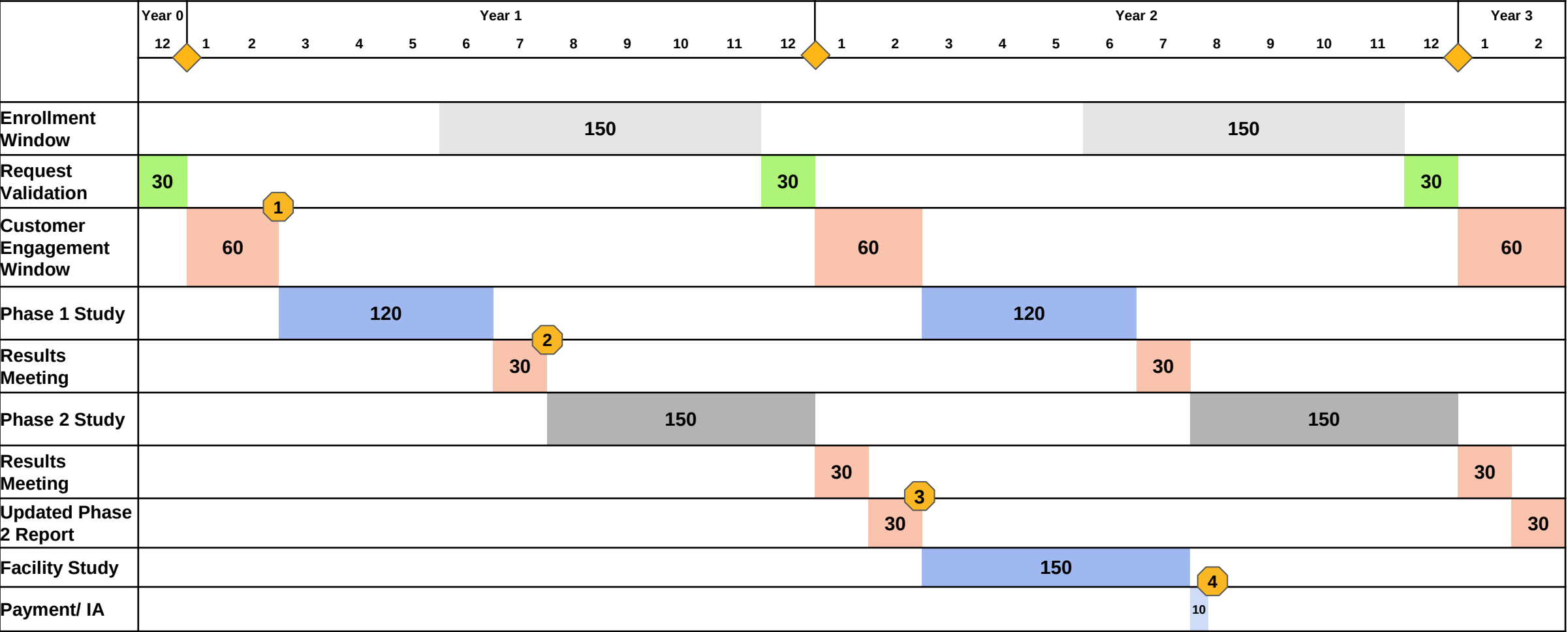


Interconnection Reform Mechanisms

Cost Allocation for both Transmission and Distribution

	Transmission	Distribution
Network Upgrade Cost (Pro rata basis)	• All transmission line and transformer upgrades shall be allocated using the distribution factor analysis. • Voltage support shall be allocated using a voltage impact analysis • Power Circuit Breaker upgrades shall be allocated proportionally based on the short circuit current contribution of each request	• Costs of Distribution Upgrades shall be allocated or assigned to each IC based upon the proportional impact of each individual Generating Facility in the Cluster Study based upon the need for the Distribution Upgrade • Distribution line work (e.g., reconductoring) shall be allocated to Generating Facilities contributing to the Upgrade on a per MW basis, based upon location (% of Upgrade).
Interconnection Station Upgrades (Per Capita)	• Interconnection Station Upgrades, including all switching stations, shall be allocated based on the number of Generating Facilities interconnecting at an individual station on a per capita basis • If multiple ICs are connecting through a shared facility(ies) those ICs shall be considered one IC	• All other Distribution Upgrades shall be allocated on a per capita basis (i.e., on a per Interconnection Request basis) based upon the number of projects on the feeder or substation contributing to the need for the Upgrade.

Proposed Future State: Cluster Study Timeline-No Phase 3

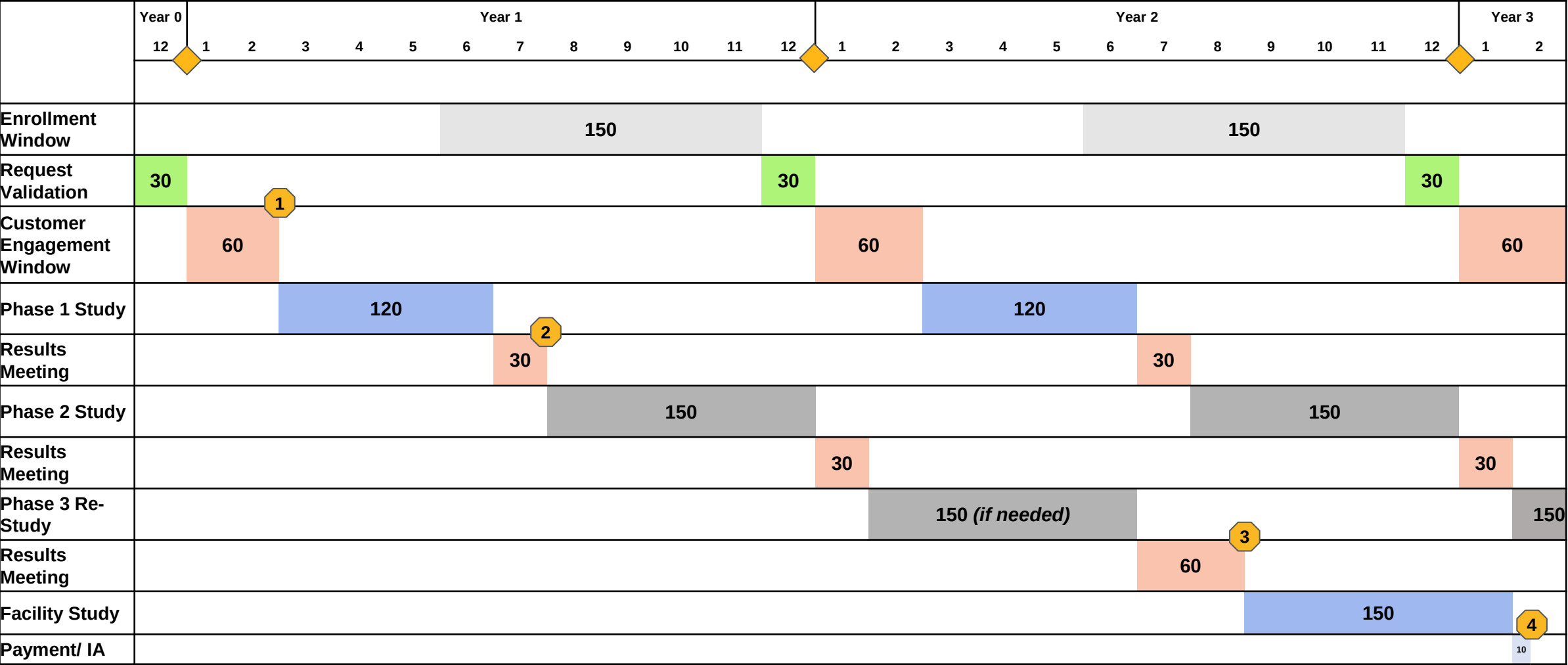


Milestones

New Cluster Starts



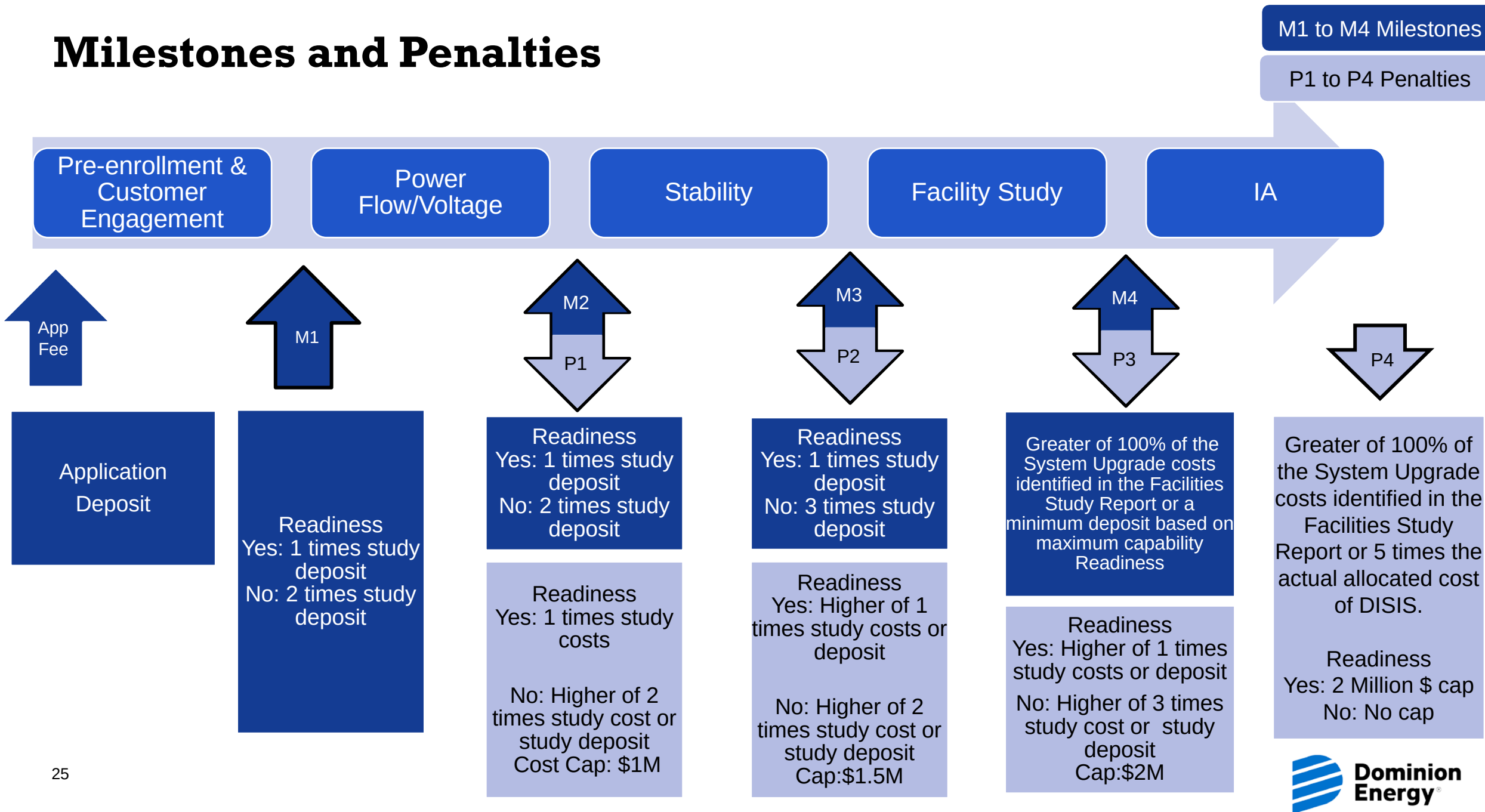
Proposed Future State: Cluster Study Timeline-With Phase 3



Milestones and Penalties

M1 to M4 Milestones

P1 to P4 Penalties



Transitional Study Process

Transitional Study Process

Goal: Timely interconnection of ready projects

Any Interconnection Customer that has received a Queue Number but has not executed an Interconnection Agreement with DESC prior to the effective date of this Appendix may request in writing after receiving notice from DESC to be studied under the Transition Procedures

Transitional Serial Process

Transitional Cluster Study Process

Withdraw with the option to participate in a future DISIS Cluster

Transitional Serial Process

Enter

- An Interconnection Customer that has a) a final System Impact Study Report, and b) a Facilities Study Agreement executed by the IC prior to the effective date of this Appendix, may opt to continue with the serial Study
- 100% system upgrade cost or minimum deposit based on maximum physical export capability*
- A contract with term of sale not less than 5 years (or) inclusion in Resource Plan
- Exclusive site control

During

- For each IC that achieves the transitional readiness requirements, DESC shall complete a facility study.
- DESC and the IC would then follow the planning and interconnection agreement administration process. M4 readiness shall not apply to transitional serial IC(s).

Exit

- Execution of interconnection agreement.

* \$100,000 for Interconnection Customers greater than 1 MW up to 5MW;
\$150,000 for Interconnection Customers greater than 5 MW up to 10 MW;
\$200,000 for Interconnection Customers greater than 10 MW up to 20 MW;
\$500,000 for Interconnection Customers greater than 20 MW up to 50 MW, or
\$800,000 for Interconnection Customers greater than 50 MW.

Transitional Cluster Study Process

Enter

- Execute a Transitional Cluster System Impact Study Agreement
- Study deposit to meet the requirements of transitional study
- Exclusive site control
- A contract with term of sale not less than 5 years (or) inclusion in Resource Plan (or) evidence that Interconnection Request was accepted by the Utility and its Queue Position was initially established at least 365 days prior to the Utility's initiation of the Transitional Cluster Study

During

- Transitional cluster meeting open to all IC(s)

Exit

- Start of the transitional Phase 1 study

Transitional Cluster Study Process- Phase 1 (Power Flow/Voltage)

Enter

- The IC(s) have met the requirements for the transitional cluster process

During

- Identify the interconnection facilities and system upgrades that are expected to be required as a result of the interconnection request(s)
- Non-binding good-faith indicative level estimate of cost responsibility and a non-binding good-faith estimate time to construct
- DESC will issue the Transitional cluster Phase 1 report.

Exit

- DESC will host a meeting to discuss the results of the report (Transitional cluster Phase 1 report meeting)

Transitional Cluster Study Process- Phase 2 (Stability & Short Circuit)

Enter

- Supplemental deposit based upon the IC(s) maximum physical export capability*
- Withdrawing IC(s) shall be assigned its allocated Transitional cluster study phase 1 study cost but shall not be subject to any withdrawal penalty

During

- Identify the interconnection facilities and system upgrades that are expected to be required as a result of the interconnection request(s)
- Non-binding good-faith indicative level estimate of cost responsibility and a non-binding good-faith estimate time to construct
- DESC will issue the transitional cluster Phase 2 report.
- Report shall identify each IC(s) estimated allocated cost for interconnection facilities and system upgrades that would be borne by the IC under a future interconnection agreement.
- If an IC withdraws the interconnection request during this phase, the supplemental deposit amount provided after phase 1 shall be treated as a withdrawal penalty unless
 - 1) the System Upgrades assigned to the IC exceeds the supplemental deposit amount required; and
 - 2) the Utility determines consistent with Good Utility Practice that a Withdrawal Penalty should not be assigned

Exit

- DESC will host a meeting to discuss the results of the report(Transitional cluster Phase 2 report meeting)

Transitional Cluster Study Process-Individual Facilities Study

Enter

- Non-refundable deposit equal to 100% of the system upgrade cost
- A contract with term of sale not less than 5 years (or) inclusion in DESC's Resource Plan and, if required, has filed for CPCN.
- Executed Facilities study agreement

During

- Identify the interconnection facilities and system upgrades that are expected to be required as a result of the interconnection request(s)
- DESC will issue the facilities study report
- Facilities study report shall specify and estimate the cost of the equipment, engineering procurement and construction work (including overheads) needed to implement the System Impact Studies and to allow the Generating Facility to be interconnected and operated safely and reliably.
- If an IC withdraws the interconnection request during this phase, the withdrawal penalty assigned shall equal the greater of the deposit or pre-payment of the system upgrades
 - 1) the System Upgrades assigned to the IC exceeds the supplemental deposit amount required; and
 - 2) the Utility determines consistent with Good Utility Practice that a Withdrawal Penalty should not be assigned

Exit

- DESC issue the facilities study report
- DESC if requested, shall make itself available to meet with the individual IC(s)
- IC(s) will proceed to the interconnection agreement and scheduling. M4 shall not apply to IC(s) in the transitional cluster study

Transitional Cluster Study Process-Construction Planning & Interconnection Agreement

Enter

- A contract with term of sale not less than 5 years or inclusion in Resource Plan
- IC(s) increase payment or DESC will decrease its additional non-refundable deposit provided after phase 2 to equal the cost of any system upgrades identified in the facilities study report.

During

- The construction planning meeting request shall include the IC's reasonably requested date for completion of the construction of the upgrades and interconnection facilities.
- The meeting is to help identify the tasks for each party and discuss and determine the milestones of the construction of the upgrades and interconnection facilities.
- DESC shall provide the executable interconnection agreement.
- The interconnection agreement shall specify milestones and payments for upgrades and interconnection facilities and/or, provisions of financial security for interconnection facilities, if acceptable by DESC. That are required prior to the start of the design and construction of upgrades and interconnection facilities .

Exit

- Execute the interconnection agreement and return to DESC
- Payment and financial security must be received 45 business days after the date the interconnection agreement is delivered to the IC for signature.

Informational Interconnection Study

Informational Study Process

Enter

- An Interconnection Customer
 - must submit a separate Informational Interconnection Request for each Generating Facility and different voltage levels being considered,
 - may submit multiple Informational Interconnection Requests for different Generating Facility sizes or configurations at a single site, not to exceed five (5) studies at any given time.

During

- DESC shall provide to Interconnection Customer, an Informational Interconnection Study Agreement, within ten (10) Business Days, which includes a non-binding good faith estimate of the timing and cost of completing the Informational Interconnection Study

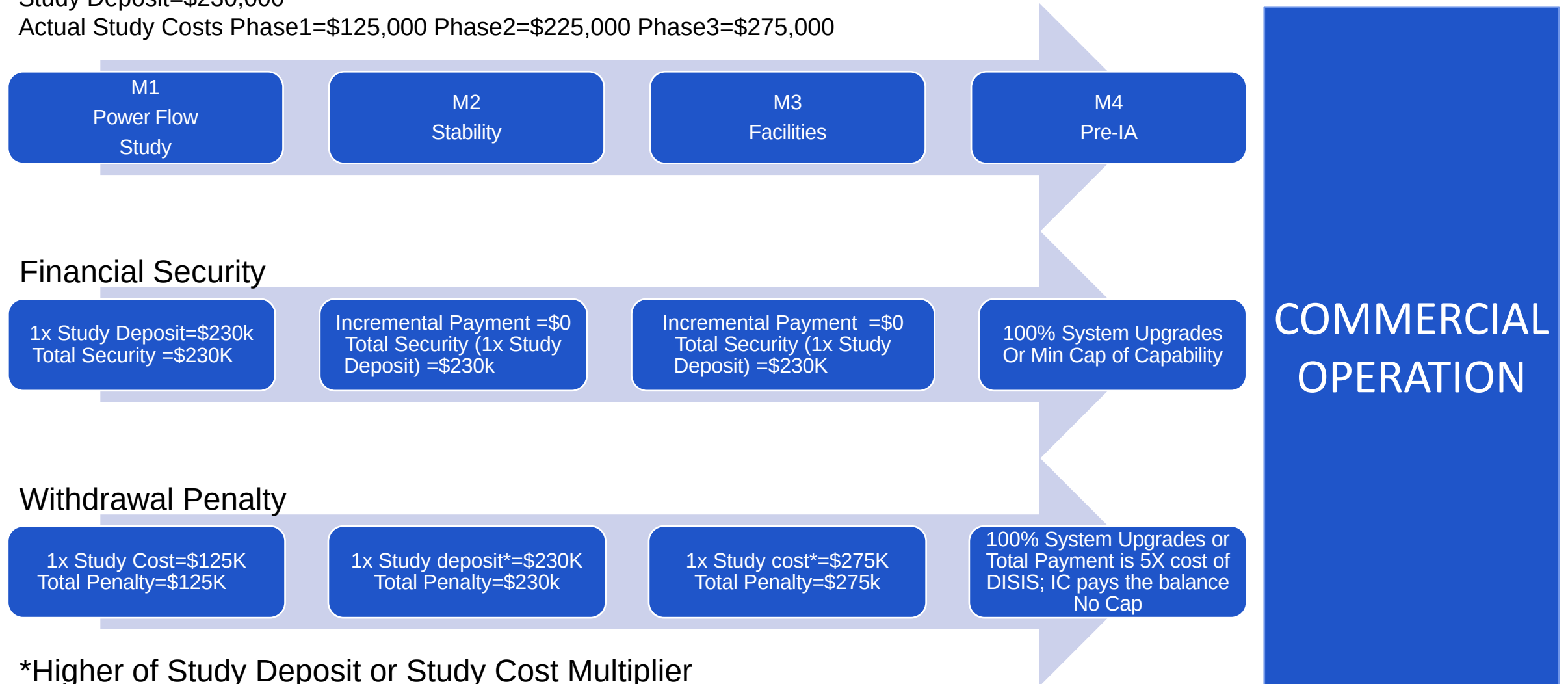
Exit

- Interconnection Customer shall execute and return the Informational Interconnection Study Agreement to the Utility within ten (10) Business Days of receipt, including
 - an agreed upon scope of work,
 - the technical data, and
 - a \$10,000 deposit to the DESC
- Solely for Informational Purposes
- Non-binding
- Does not confer any rights to the Interconnection Customer (*an application for interconnection to the utility is still required*)
- Aid a prospective IC in its business decisions related to interconnection of a Generating Facility prior to entering the Study Process

Example 1

180 MW **Ready** Project,
Study Deposit=\$230,000

Actual Study Costs Phase1=\$125,000 Phase2=\$225,000 Phase3=\$275,000



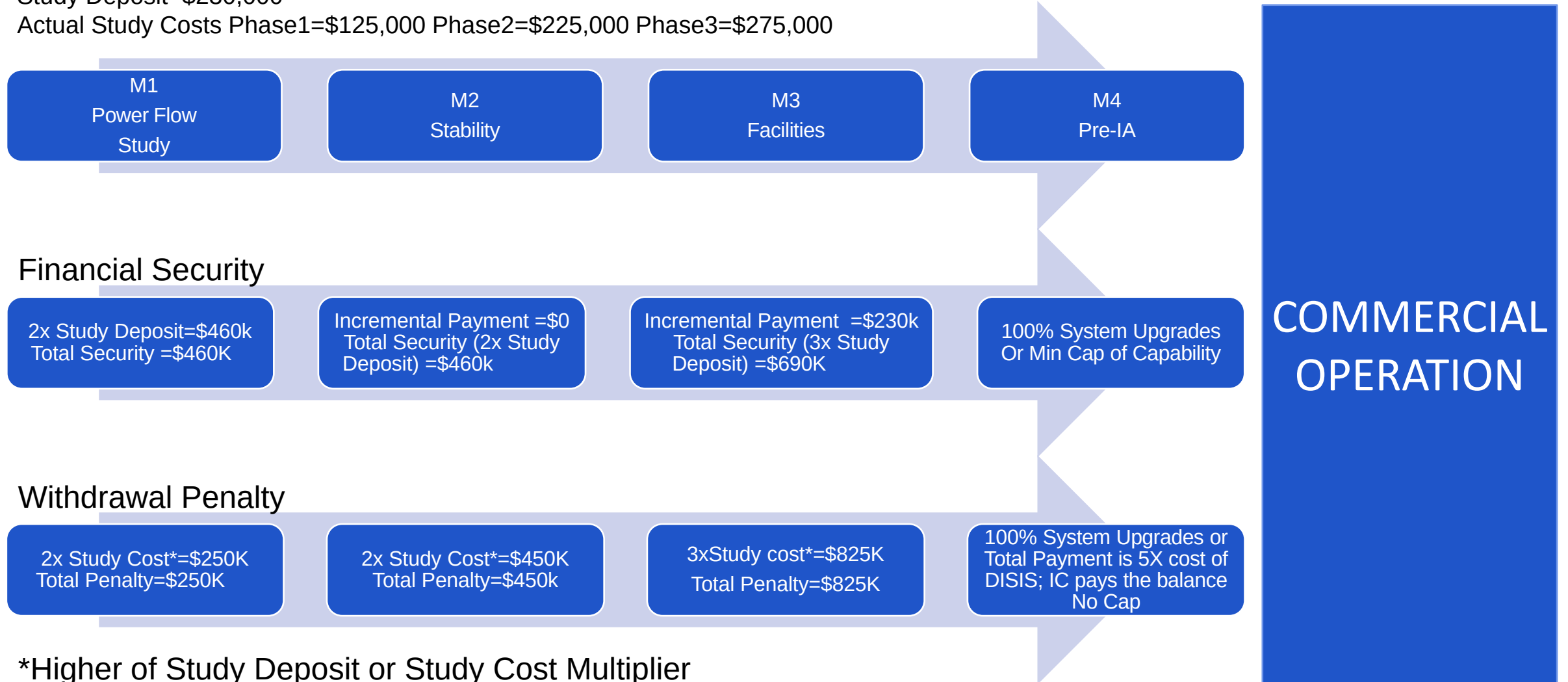
*Higher of Study Deposit or Study Cost Multiplier

Example 2

180 MW **Non-Ready** Project,

Study Deposit=\$230,000

Actual Study Costs Phase1=\$125,000 Phase2=\$225,000 Phase3=\$275,000



*Higher of Study Deposit or Study Cost Multiplier

Network Upgrade Cost Allocation - Example

Transmission Line upgrade with a total cost of \$50 Million shared among six generators

	A	B	C	D	E	F	Total
Generator Rating (MW)	100	200	400	750	5	1	
MW Impact	4	6	10	20	1	0.5	41.5 MW
% of Cost Allocation = $\frac{\text{MW Impact}}{\text{Total MW}}$	9.64%	14.46%	24.10%	48.19%	2.41%	1.20%	100%
Allocation cost of upgrade in Millions = $\% \text{ Cost Allocation} \times \text{Upgrade Cost}$	\$4.82	\$7.23	\$12.05	\$24.10	\$1.20	\$0.60	\$50 Million

- All resources will pay the assigned upgrade cost based on percent of the total impact

Stakeholder Feedback

- Please send your comments and feedback to email etariffelectrictrans@dominionenergy.com using the format below

Category or Topic	Stakeholder	Issue / Comment	Proposal / Idea