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Generator Interconnection Reform Strategy

February 10, 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
Cluster Studies	Guidehouse	9:30 – 10:15
Break		10:15 – 10:30
Milestones and Payments	Guidehouse	10:30 – 11:00
Cost Allocation	Guidehouse	11:00 – 11:30
Open Discussion and Next Steps	All	11:30 – Noon

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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. (2 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.

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Welcome – Implement Cluster Study option Stakeholder Meeting 1 of 2

- 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 will begin after this meeting and will be drafted by Parker Poe

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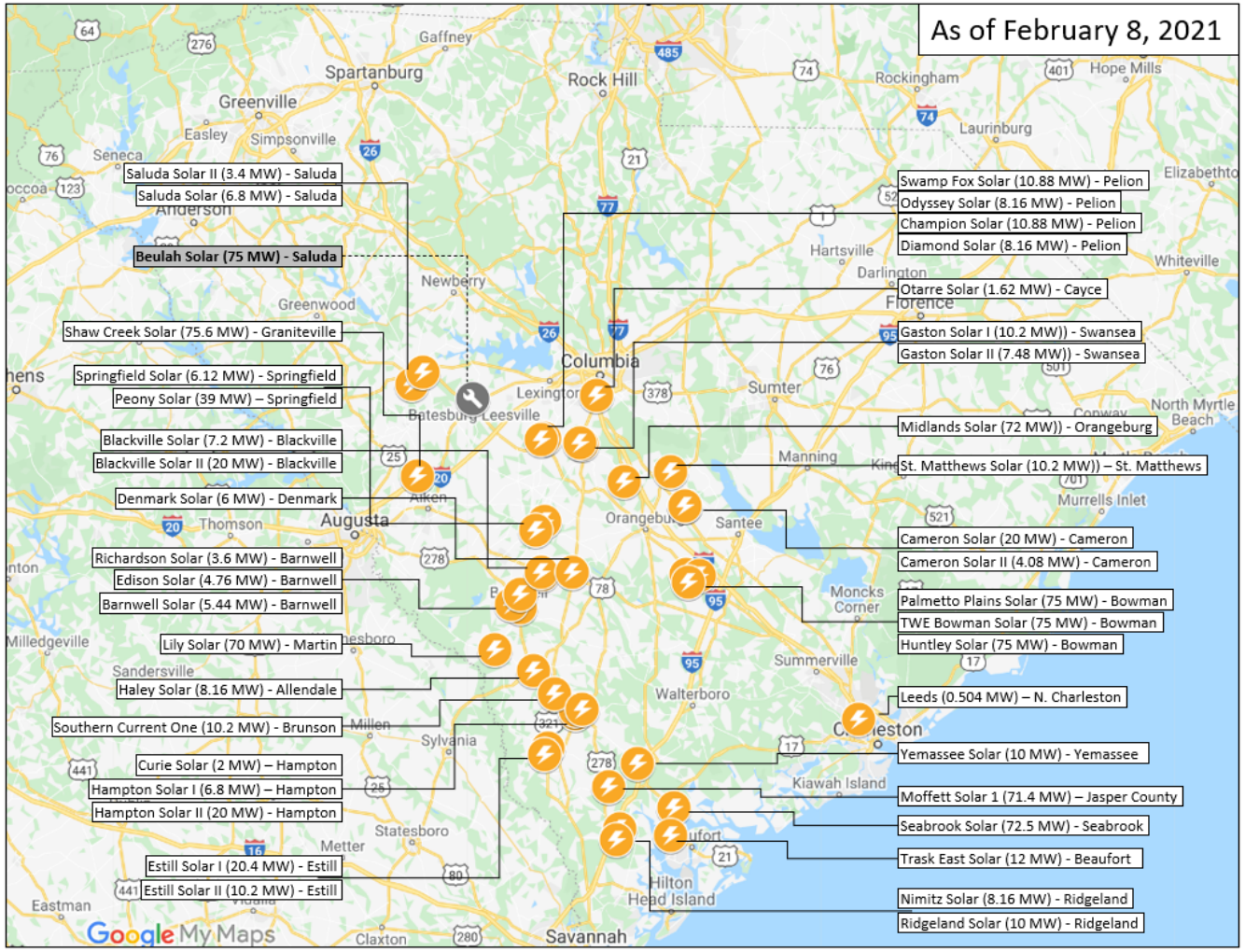
Utility-Scale Solar-888 MW

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



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Dominion Energy South Carolina Renewable Energy

Solar Photovoltaic – 1003.5 MW (11,661 Systems)

• Residential	81.8 MW
• Commercial/Industrial	33.4 MW
• Utility Scale	872.3 MW
• Community Solar	16.0 MW

Processed via Queue

Hydro Plants – 794 MW

- Saluda, Neal Shoals, Parr, Stevens Creek (218 MW)
- Fairfield Pumped Storage (576 MW)

Wind Turbine Drivetrain Research

- Dominion Energy Innovation Center @ Clemson University Restoration Institute

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Current Processes

- DESC administers the Small Generator Interconnection Procedure (SGIP – FERC jurisdictional), the Large Generator Interconnection Procedure (LGIP – FERC jurisdictional) and the 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.
- To date, DESC has processed 239 projects 1MW or less in size.
- DESC has received 279 projects greater than 1 MW in size. These total 12,529 MW. Of those, 68 projects totaling 6,911 MW remain in process.

Serial Process by the Numbers

State Interconnection Queue (< 80 MW)		
Status	MWs	Total Projects
Total	6,669	463
Complete	953	158
In Progress	1,901	75
Withdrawn	3,815	247
as of 2/09/2021; Does not include Boeing		

FERC Interconnection Queue (> 80 MW)		
Status	MWs	Total Projects
Total	5,927	40
Complete	0	0
In Progress	5,015	26
Withdrawn	912	14
as of 02/09/2021		

58 projects, totaling 826 MW, have executed interconnection agreements and later withdrawn from the queue.

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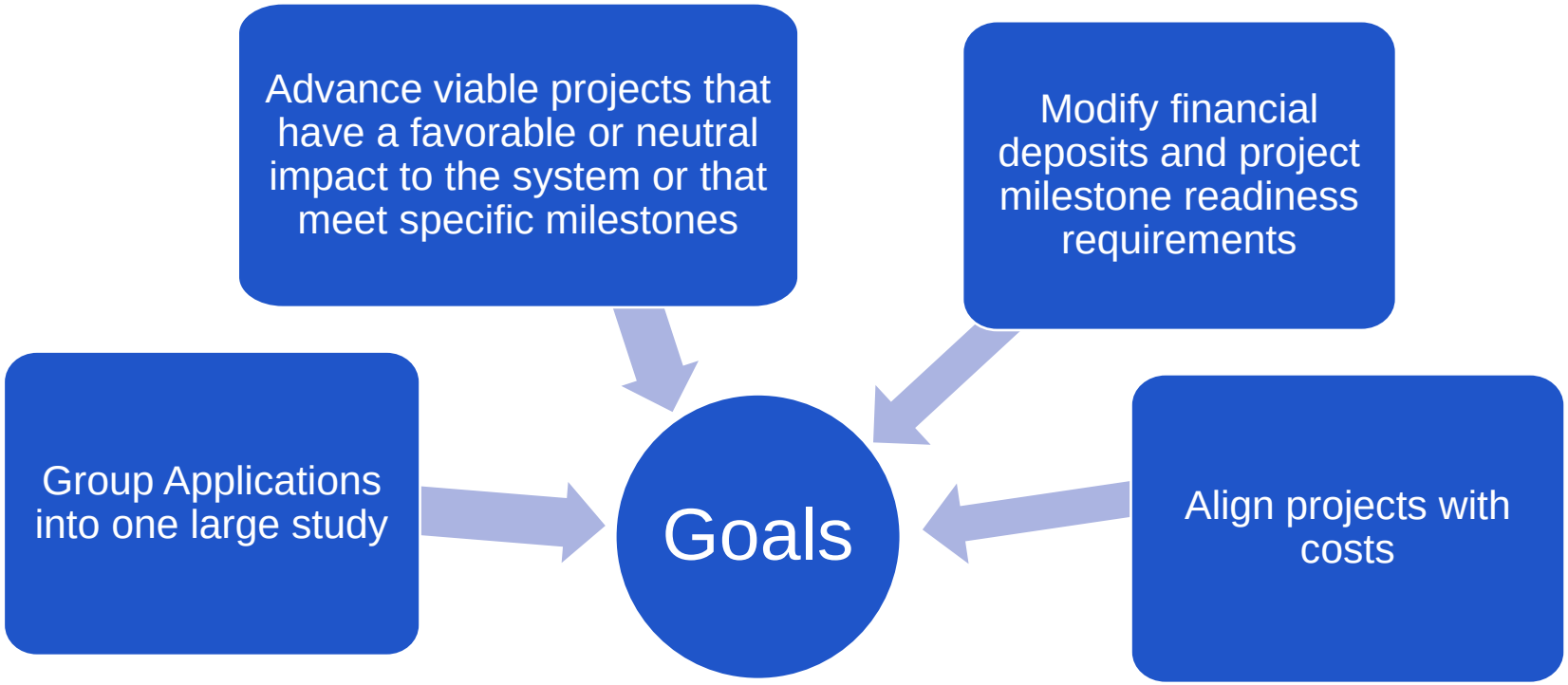
Phase 1 - Proposed Improvements

Cluster Studies

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



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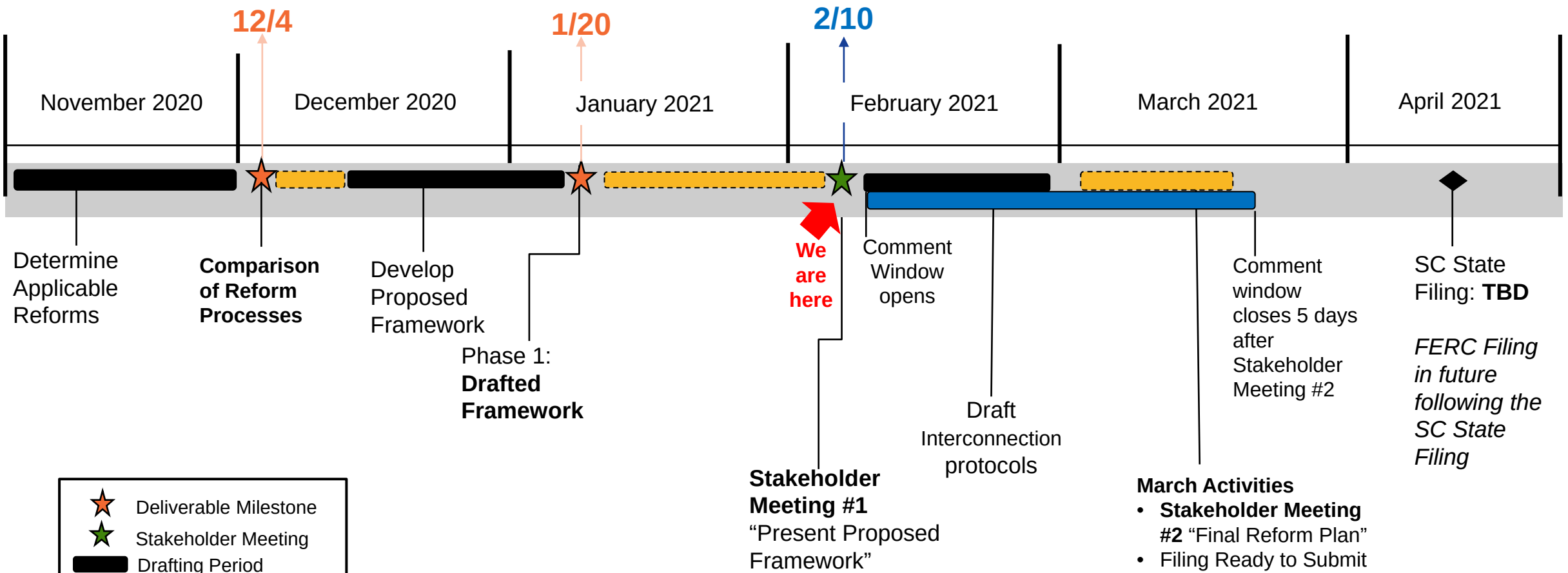
2020-2021 Queue Reform Stakeholder Process Timeline*



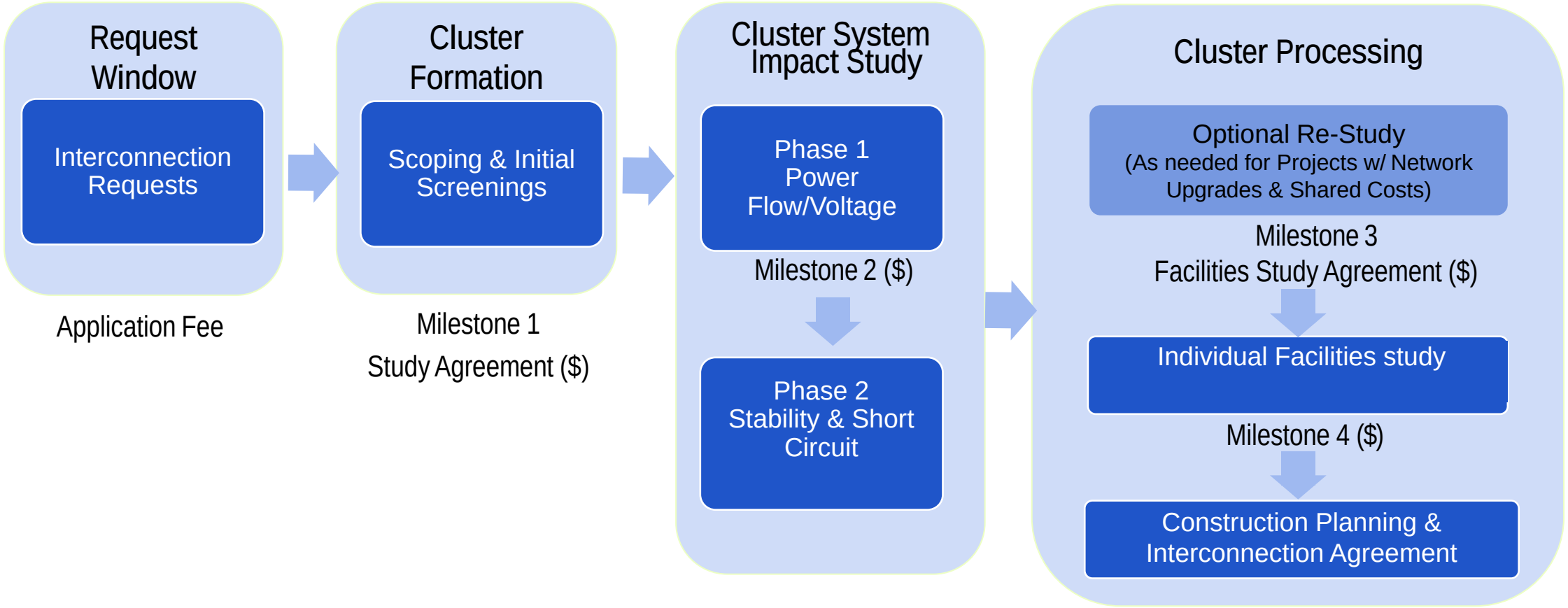
*This timeline may be adjusted based on filing requirements

Cluster Studies

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



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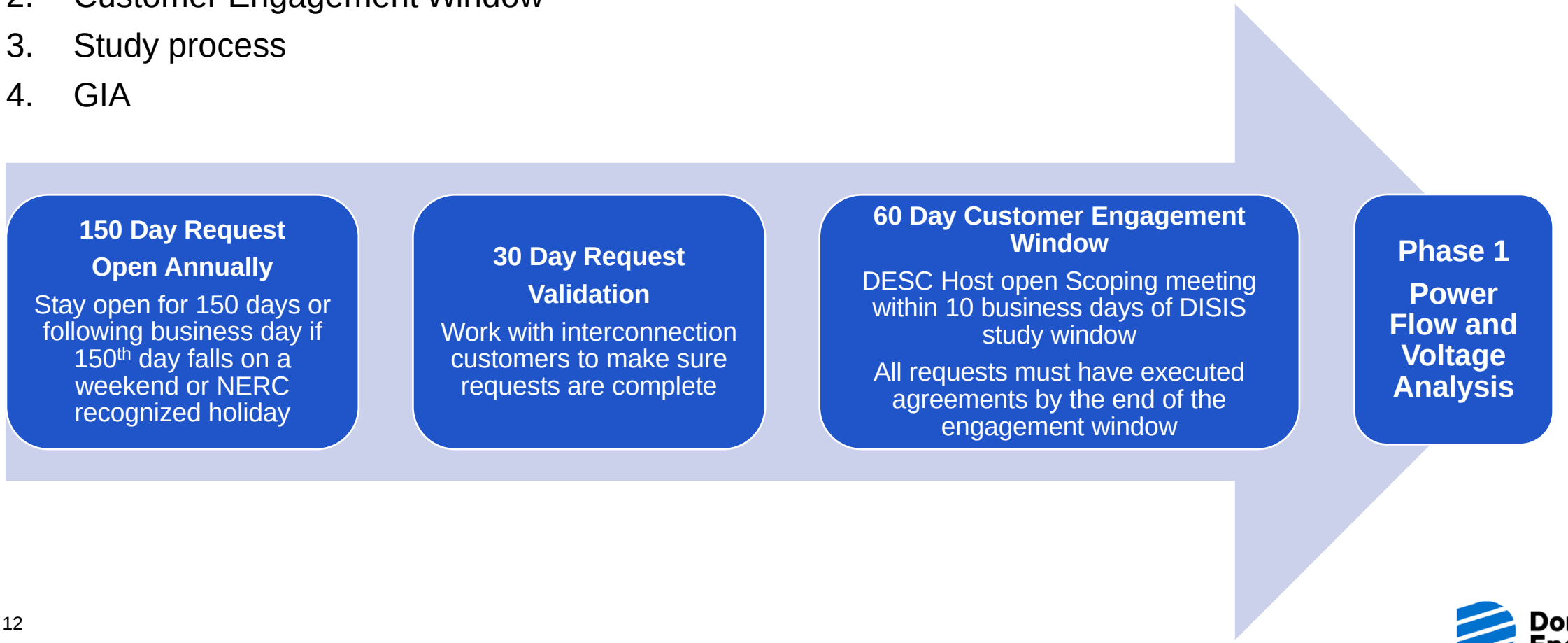
Definitive Interconnection Study Process Overview

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

Study steps:

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



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Definitive Interconnection Study

Queue Position	• All projects in a cluster are considered equally submitted at one queue position
	• Each cluster is studied in queue order which means, o The next cluster assumes the generation from the previous cluster as higher queued generation o The upgrade costs of one cluster are assigned to the interconnection customers in that cluster
Study Methodology	• Study scope and assumptions will be presented and discussed in more detail during the Customer Engagement Window
	• DISIS Cluster requests may be grouped based on the point of interconnection (POI) and electrical impact area
	• All requests in the electrical impact area will be studied together and Network Upgrades for that electrical impact area will be identified and allocated
	• All electrical impact area and associated Network Upgrades will be modeled in a study case and any additional Network Upgrades will be identified for the entire cluster
	• Studies will use a stressed dispatch for each electrical impact area

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Transitional Serial Interconnection Study

Eligibility	• An Interconnection Customer that has a) a final System Impact Study Report that identifies the Interconnection Facilities and any Upgrades required to feasibly interconnect the proposed Generating Facility, and b) a Facilities Study Agreement executed by the Interconnection Customer prior to the effective date of this Appendix, may opt to continue with the serial Study
Requirements	• 100% system upgrade cost or minimum deposit based on name plate capacity
	• Exclusive site control
	• Contract of sale or evidence that the Generating Facility is included in a Utility's Resource Plan
	• Facilities study will be completed

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Transitional Cluster Interconnection Study

Eligibility	• An Interconnection Customer with an assigned Queue Position prior to the effective date of this Appendix, may opt to enter the transitional cluster study
Requirements	• 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
	• Transitional Cluster Study Agreement
	• Study deposit to meet the requirements of transitional study
	• Exclusive site control
	• An assigned queue position prior to the effective date of the GIP
Study Process	• There are two phases of Transitional Cluster Study
	• Phase 1 : A power flow and voltage analysis within ninety (120) Calendar Days. The Transitional Cluster Study Phase 1 Report shall identify the Interconnection Facilities and System Upgrades that are expected to be required as a result of the Interconnection Request(s) and provide a non-binding good-faith indicative estimate of cost responsibility and a non-binding good-faith estimated time to construct.
	• Phase 2 : An updated power flow/voltage analysis (if necessary), stability analysis and short circuit analysis within 150 days. The Phase 2 Report shall identify each Interconnection Customer's estimated allocated costs for the Interconnection Facilities and System Upgrades that would be borne by the Interconnection Customer under a future Interconnection Agreement.
	• Facilities study will be completed

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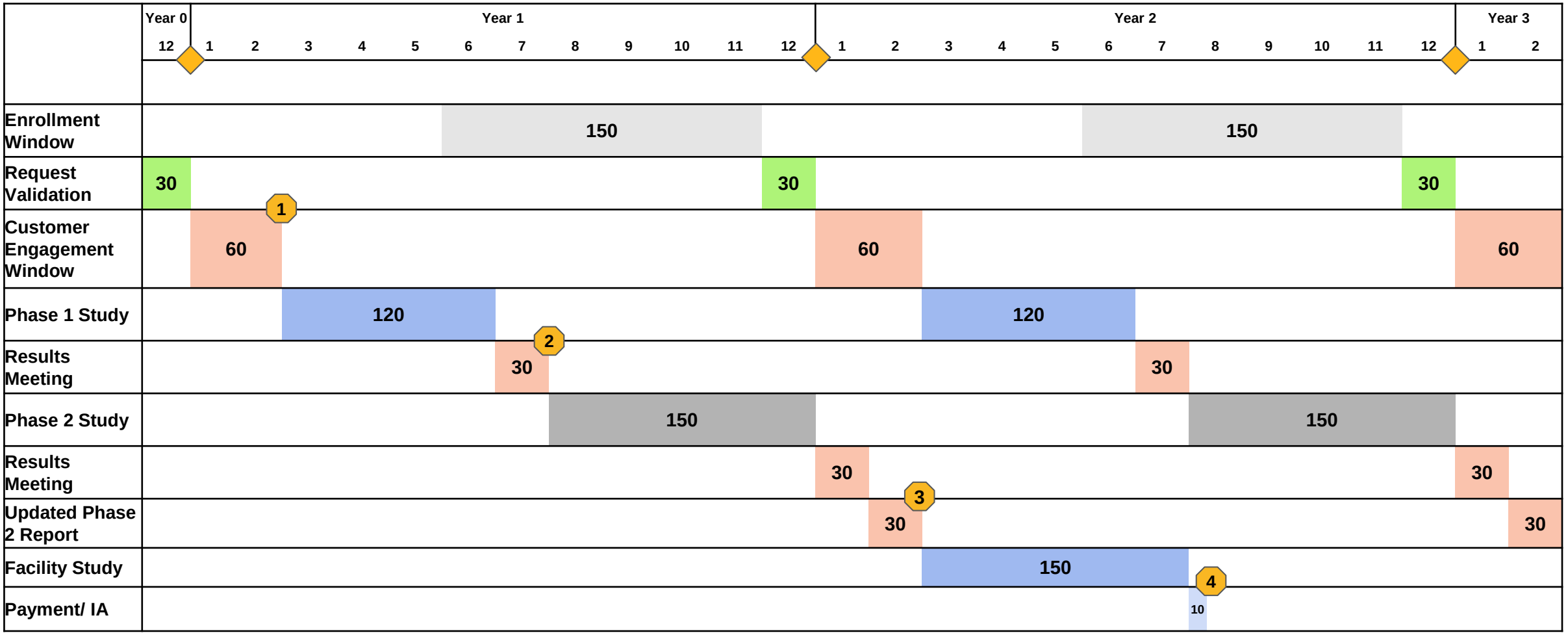
Proposed Future State: Cluster Study Timeline-No Phase 3



Milestones

New Cluster Starts

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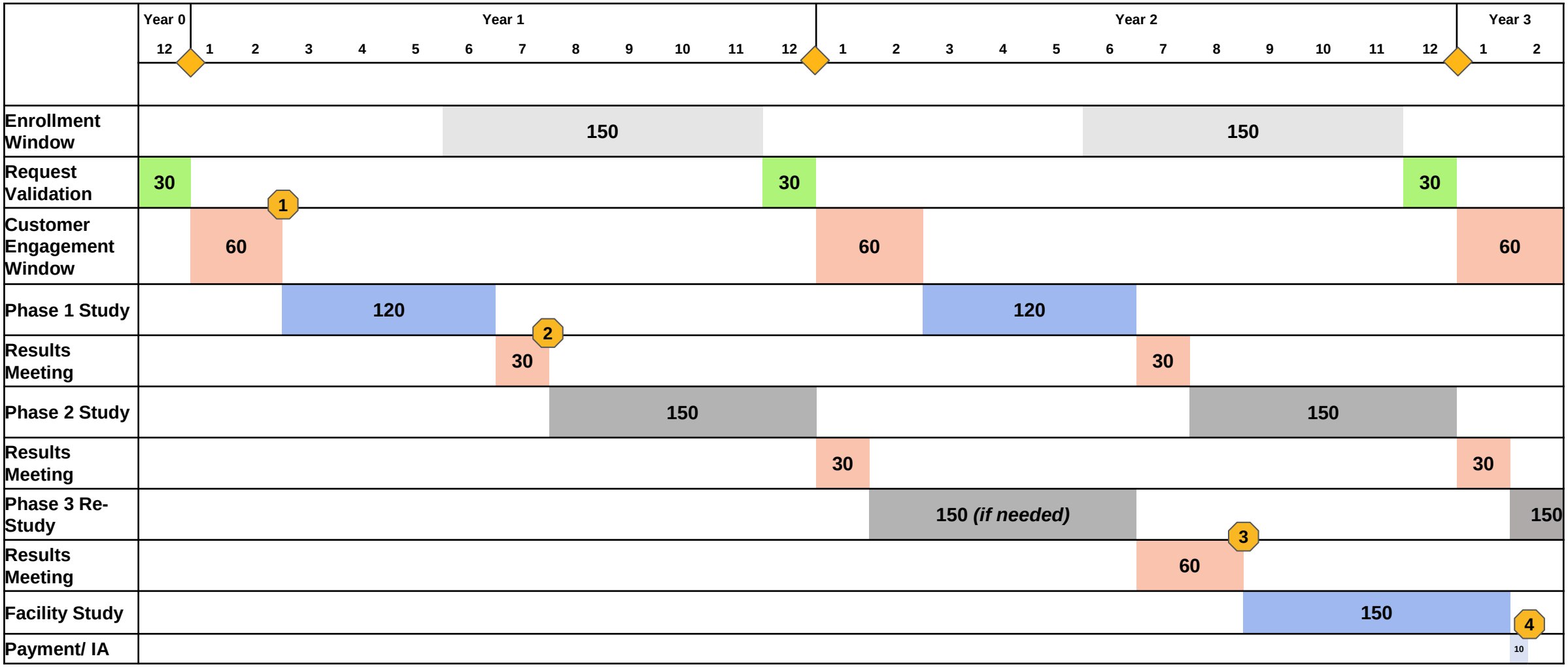
Proposed Future State: Cluster Study Timeline-With Phase 3



Milestones

New Cluster Starts

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Informational Interconnection Study

Purpose	• 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 Interconnection Customer in its business decisions related to interconnection of a Generating Facility prior to entering the Study Process
Requirements	• An Interconnection Customer o must submit a separate Informational Interconnection Request for each Generating Facility and different voltage levels at a Generating Facility, o may submit multiple Informational Interconnection Requests for different Generating Facility sizes or configurations at a single site, not to exceed five (5) studies in the request window, at any given time.
	• The Utility 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
	• Interconnection Customer shall execute and return the Informational Interconnection Study Agreement to the Utility within ten (10) Business Days of receipt, including o an agreed upon scope of work, o the technical data, and o a $10,000 deposit to the Utility
	• The Utility shall then countersign and return the Informational Interconnection Study Agreement within ten (10) Business Days of receipt.

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Provisional Interconnection Study (FERC Only)

Purpose	• Prior to completion of requisite Interconnection Facilities, Network Upgrades, Distribution Upgrades, or System Protection Facilities Transmission Provider may execute a Provisional Large Generator Interconnection Agreement or Interconnection Customer may request the filing of an unexecuted Provisional Large Generator Interconnection Agreement with the Interconnection Customer for limited interconnection service at the discretion of Transmission Provider based upon an evaluation that will consider the results of available studies.
Requirements	• Transmission Provider shall determine whether any Interconnection Facilities, Network Upgrades, Distribution Upgrades, or System Protection Facilities that are necessary to meet the requirements of NERC, or any applicable Regional Entity for the interconnection of a new, modified and/or expanded Generating Facility are in place prior to the commencement of Interconnection Service from the Generating Facility.
	• Transmission Provider shall determine, through available studies or additional studies as necessary, whether stability, short circuit, thermal, and/or voltage issues would arise if Interconnection Customer interconnects without modifications to the Generating Facility or Transmission System.
	• The maximum permissible output of the Generating Facility in the Provisional Large Generator Interconnection Agreement shall be studied and updated annually and at the Interconnection Customer's expense.
	• Interconnection Customer assumes all risk and liabilities with respect to changes between the Provisional Large Generator Interconnection Agreement and the Large Generator Interconnection Agreement, including changes in output limits and Interconnection Facilities, Network Upgrades, Distribution Upgrades, and/or System Protection Facilities cost responsibilities.

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Milestones and Payments

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SOUTH CAROLINA STATE PROCESS

Study Deposit Amounts – State Process

Size of Project Associated With Interconnection Request	Amount of Deposit
< 20 MW	$20,000 + $1.00/ kW of Generation Facility Capacity*
≥ 20 MW and < 50 MW	$35,000 + $1.00/ kW of Generation Facility Capacity*
≥ 50 MW	$50,000 + $1.00/ kW of Generation Facility Capacity*

** Or Interconnection Service requested, if the Interconnection Service requested is less than the Generation Facility Capacity*

- The Interconnection Customer must hold exclusive site control to construct the entire Generating Facility and all required Interconnection Facilities to the Point of Interconnection to the Utility's System.

Milestones and Penalties – State Process

Security

- M1 – M4 = Irrevocable letter of credit upon which the Utility may draw or cash
- M4 = Additional options for M4 are surety bond or other financial arrangement

Readiness Milestones

- *Should be satisfied by Interconnection Customer by providing one of the following or additional security deposit*
  - For M1, M2, M3, M4:
    - Executed term sheet binding the parties for at least 5 years (or)
    - Evidence of ability to sell its output into a solicitation process or inclusion into a resource plan
  - Additional Requirements for M3
    - Voluntary Renewable Energy program participation

Milestones and Penalties – State Process

M1 to M4 Milestones

P1 to P4 Penalties

App Fee

Application Fee $5000

M1

Readiness
Yes: 1 times study deposit
No: 2 times study deposit

M2

P1

Readiness
Yes: 1 times study deposit
No: 2 times study deposit

Readiness
Yes: 1 times study costs

No: Higher of 2 times study cost or study deposit
Cost Cap: $1M

M3

P2

Readiness
Yes: 1 times study deposit
No: 3 times study deposit

Readiness
Yes: Higher of 1 times study costs or deposit

No: Higher of 2 times study cost or study deposit
Cap:$1.5M

M4

P3

Greater of 100% of the System Upgrade costs identified in the Facilities Study Report or a minimum deposit based on nameplate capacity
Readiness

Readiness
Yes: Higher of 1 times study costs or deposit
No: Higher of 3 times study cost or study deposit
Cap:$2M

P4

Greater of 100% of the System Upgrade costs identified in the Facilities Study Report or 5 times the actual allocated cost of DISIS.

Readiness
Yes: 2 Million $ cap
No: No cap

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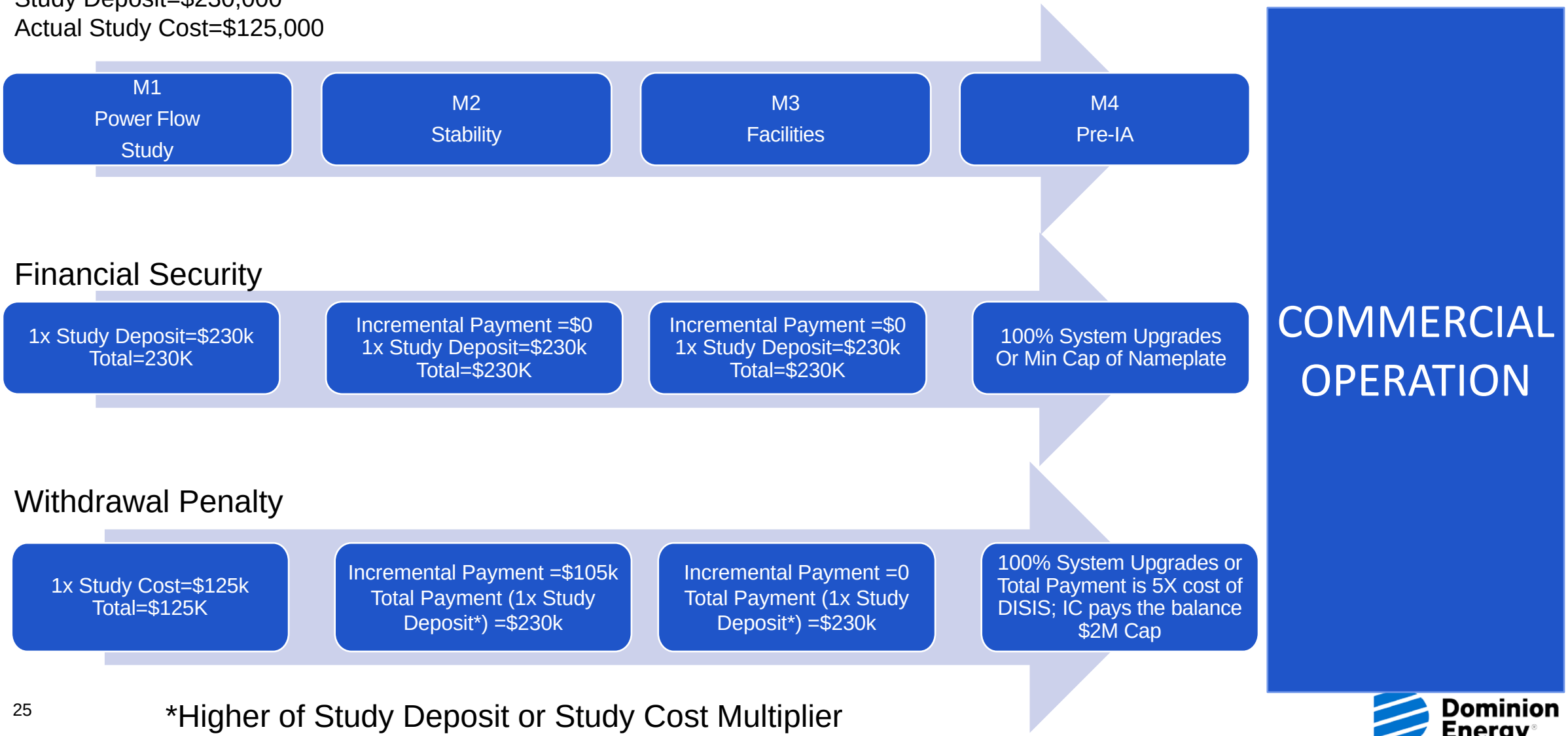
Example 1 – State Process

180 MW **Ready** Project,
Study Deposit=$230,000
Actual Study Cost=$125,000



*Higher of Study Deposit or Study Cost Multiplier

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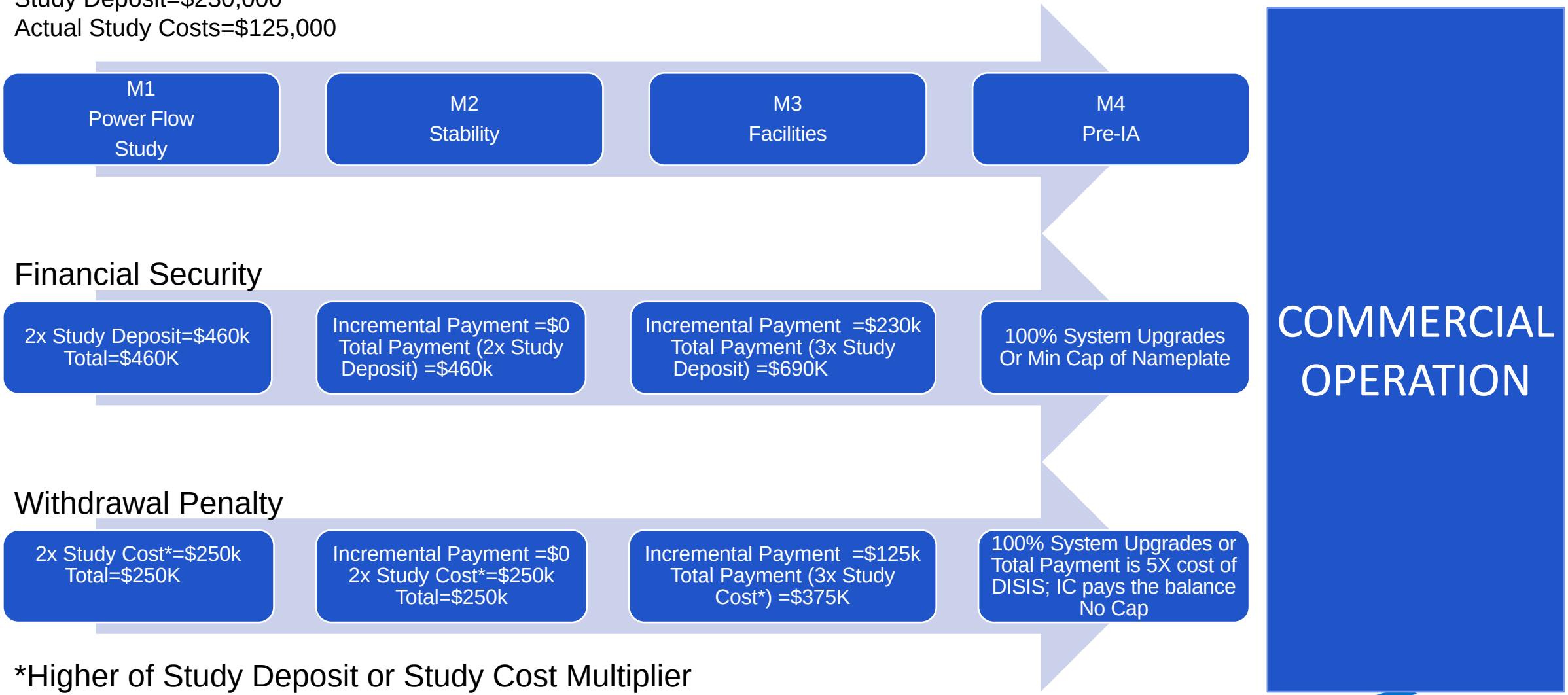
Example 2 – State Process

180 MW **Non-Ready** Project,
Study Deposit=$230,000
Actual Study Costs=$125,000



*Higher of Study Deposit or Study Cost Multiplier

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Distribution of DISIS Revenue/Withdrawal Penalty

- Withdrawal Penalty revenues associated with M1-M3 shall be used to fund generation interconnection studies.
- Withdrawn Interconnection Customers 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 Interconnection Customer 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 Interconnection Customers 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.

FERC PROCESS

Study Deposit Amounts – FERC Process

Size of Project Associated With Interconnection Request	Amount of Deposit
< 20 MW	$20,000 + $1.00/ kW of Generation Facility Capacity*
≥ 20 MW and < 50 MW	$35,000 + $1.00/ kW of Generation Facility Capacity*
≥ 50 MW < 80 MW	$50,000 + $1.00/ kW of Generation Facility Capacity*
≥ 80 MW < 200 MW	$150,000
≥ 200 MW	$250,000

** Or Interconnection Service requested, if the Interconnection Service requested is less than the Generation Facility Capacity*

- The Interconnection Customer must hold exclusive site control to construct the entire Generating Facility and all required Interconnection Facilities to the Point of Interconnection to the Utility's System.

Milestones and Penalties – FERC PROCESS

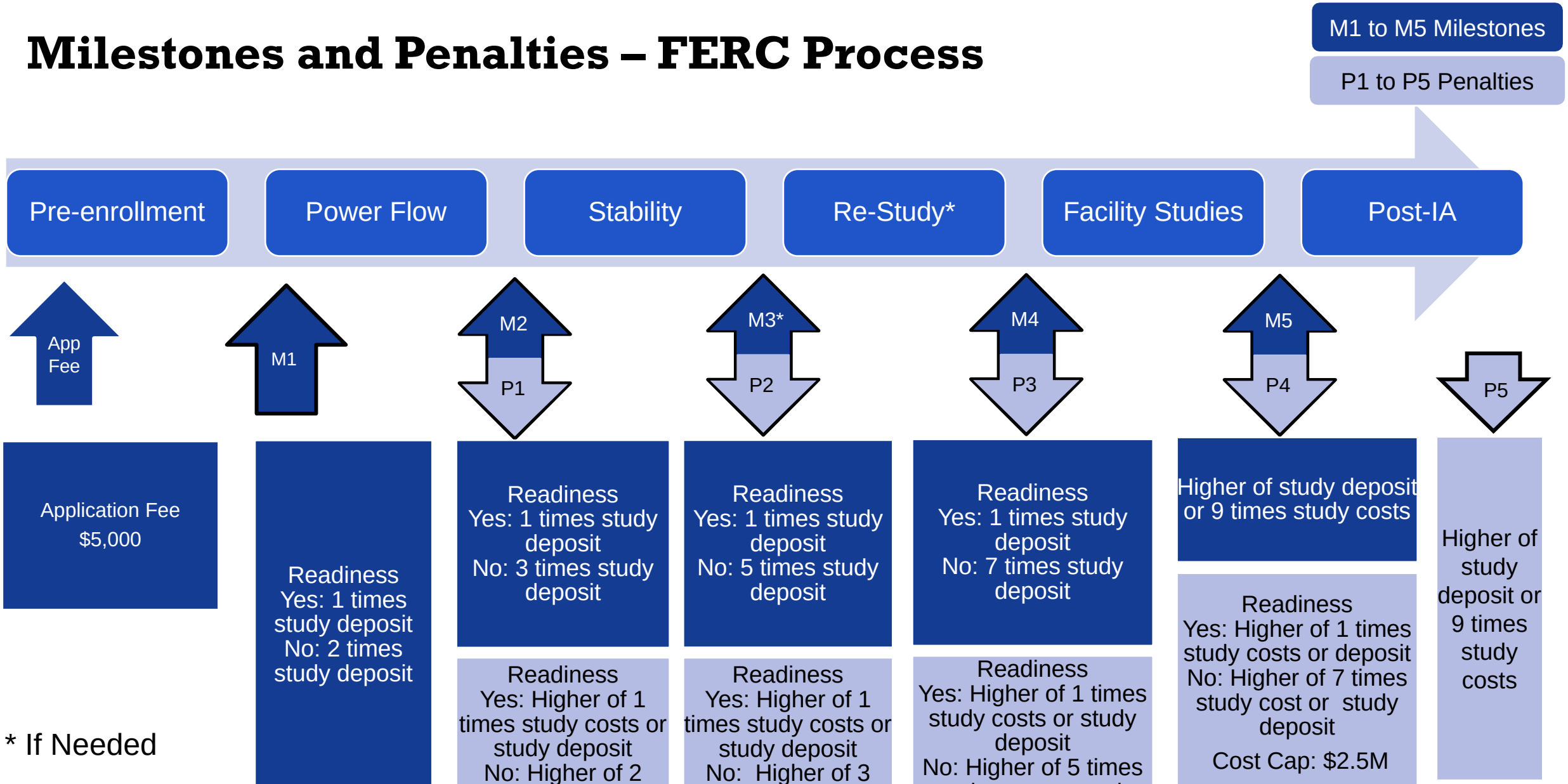
Security

- M1 – M4 = Irrevocable letter of credit upon which the Utility may draw or cash
- M5 = Additional options for M5 are surety bond or other financial arrangement

Readiness Milestones

- *Should be satisfied by Interconnection Customer by providing one of the following or additional security deposit*
  - For M1, M2, M3, M4, M5:
    - Executed term sheet binding the parties for at least 5 years (or)
    - Evidence of ability to sell its output into a solicitation process or inclusion into a resource plan
    - Provisional Large Generator Interconnection Agreement accepted for filing at FERC. Such an agreement shall not be suspended and shall include a commitment to construct the Generating Facility.

Milestones and Penalties – FERC Process



* If Needed

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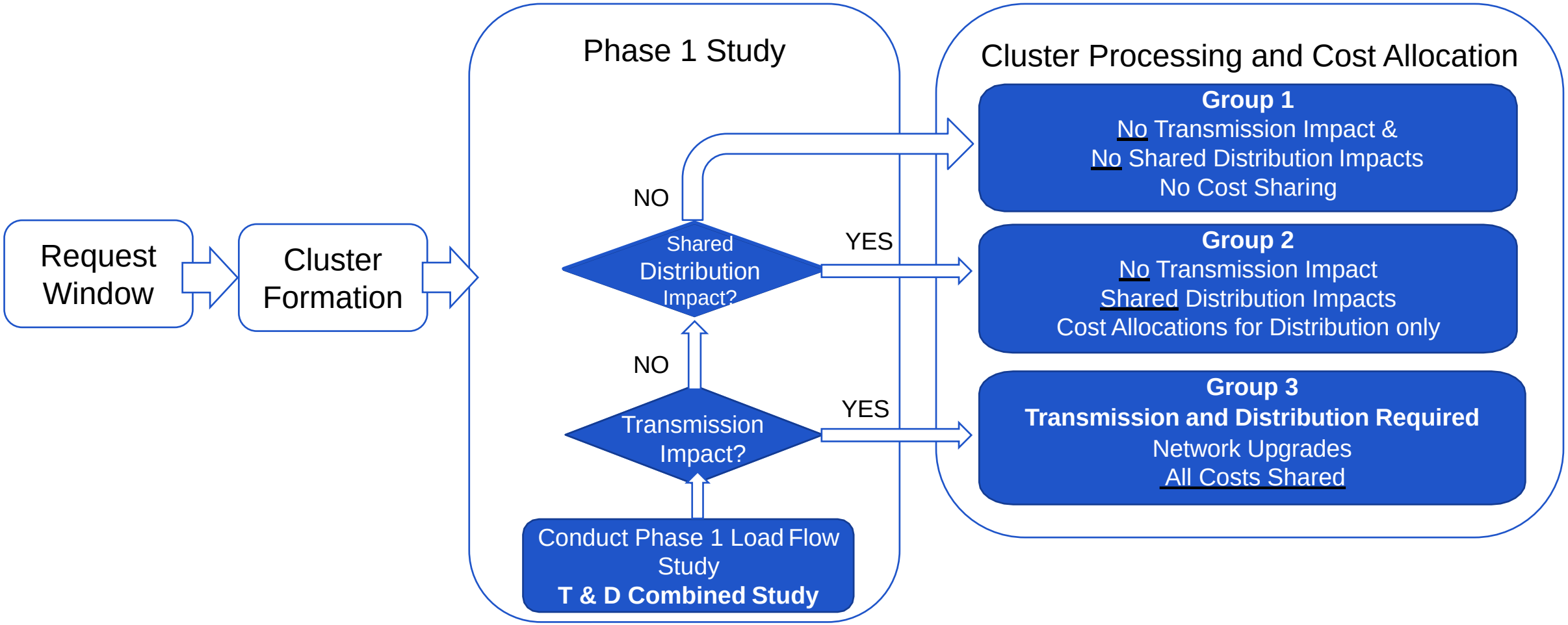
Cost Allocation

Cost allocation



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Interconnection Reform Mechanisms

Cost Allocation for both Transmission and Distribution

	Transmission	Distribution
Network Upgrade Cost (Pro rata basis)	• All transmission lines and transformers upgrades shall be allocated using the distribution factor analysis. • Voltage support shall be allocated using a voltage impact analysis • 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 Interconnection Customer 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 IC are connecting through a shared facility(ies) those ICs shall be consider 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.

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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 = MW Impact/Total MW	9.64%	14.46%	24.10%	48.19%	2.41%	1.20%	100%
Allocation cost of upgrade in Millions = % Cost Allocation × 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
- Cost allocation DFAX criteria is 1%

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

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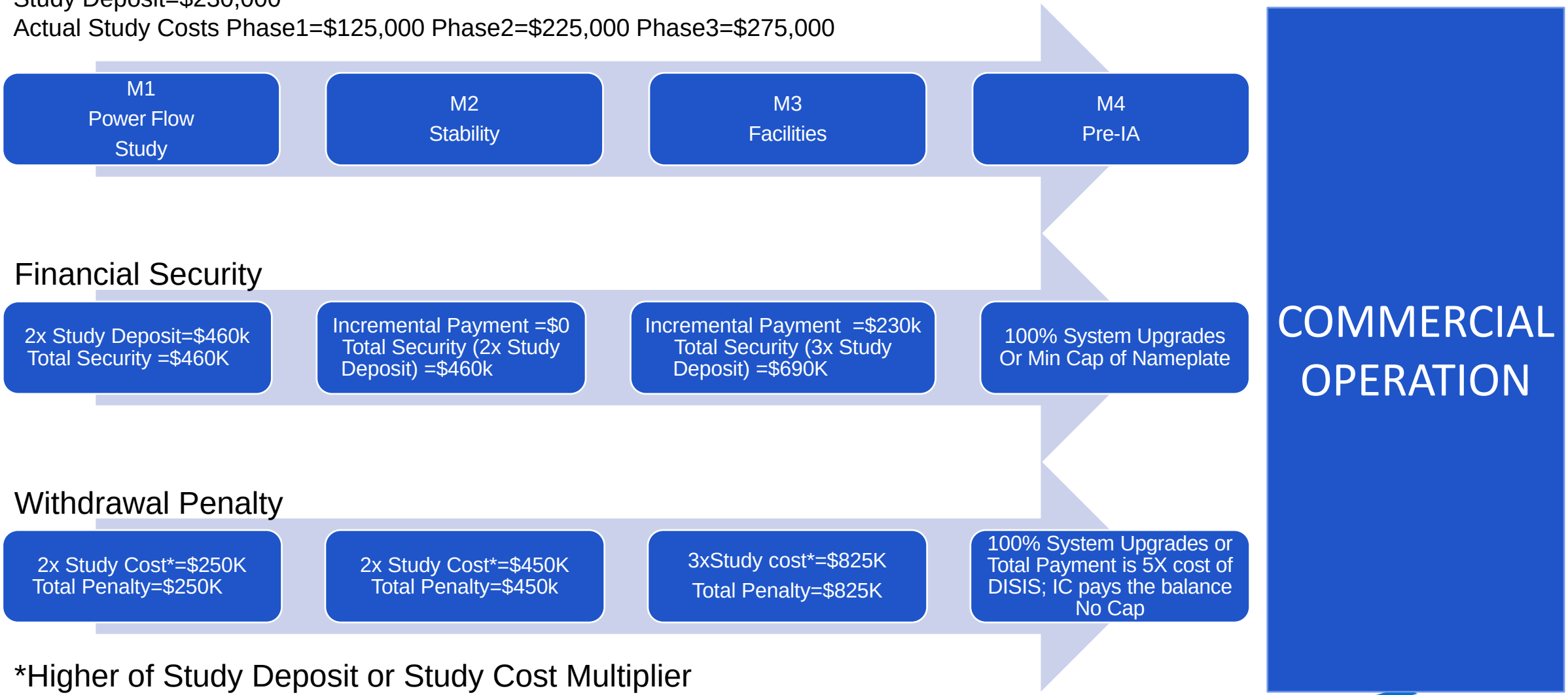
Appendix

Example 3 – State Process

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

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