

IIRG Flexible Interconnection Sub-group Meeting #2 10/14/2025



Timing & Agenda

Timing

- Discussion: 12-1p
- Break 1-1:15p
- Discussion: 1:15-2:15p
- Break: 2:15-2:20p
- Discussion & Wrap-up: 2:20-3p

Agenda

1. Definition, Approaches & Attributes + Prioritize Approach(es)
2. Key Scenarios + Prioritize Scenario(s)
3. EDCs Flex IX Baseline
4. Near-term Priorities & Roadmap

Flexible Interconnection

Definition, Approaches & Attributes

Flexible Interconnection: Definition

TSRG Sub-group Definition:

A Flexible Connection is when an asset is provided a Flexible Capacity Allocation. The asset will be able to connect where existing grid infrastructure can accommodate said capacity without the need for additional system modifications to the common distribution system. Additional capacity can be made available based on real time monitoring of grid conditions and available capacity. Flexible Connections use time-based dynamic controls to adjust generation output to grid conditions in real time.

The goal being to enable DER projects in appropriate areas to interconnect to avoid significant distribution system upgrades, while reducing costs and timeframes associated with the standard interconnection process. This includes defining policy on how curtailment will work for DERs. Success may allow for faster and cheaper integration of DERs by increasing the hosting capacity of existing grid infrastructure and/or increased penetration of DERs to the grid.

Does this definition capture the different Flex IX approaches?

Flexible Interconnection: Approaches

Flex IX Approach	Description	Example												
Import/Export Limits	DG facility agrees to temporary fixed limits while capacity is built (Permanently de-rated is considered import/export limits but not Flex IX)	Developer exports 2MW today & additional 3MW when upgrades are complete												
Dispatch Limiting Schedule Connections	DG facility connects full nameplate capacity but agrees to pre-defined schedules based on time of day, month, season	<table><thead><tr><th>Period</th><th>10am to 4pm</th><th>4pm to 10am</th></tr></thead><tbody><tr><td>October to March</td><td>No Constraint</td><td>No Constraint</td></tr><tr><td>April to September</td><td>30% of full output</td><td>No Constraint</td></tr><tr><td>May to August</td><td>0% of full output</td><td>No Constraint</td></tr></tbody></table>	Period	10am to 4pm	4pm to 10am	October to March	No Constraint	No Constraint	April to September	30% of full output	No Constraint	May to August	0% of full output	No Constraint
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Dynamic Connections	DG facility connects full nameplate capacity and agrees to be curtailed entirely or partially at a given time, up to a certain percentage of annual kWh/mWh based on real-time or near real-time system needs <i>Common technical capabilities to leverage resources for distribution grid services as part of Grid Compensation Fund. Flex IX + grid services could be bundled upfront*</i>	Developer agrees to be curtailed up to 5% of their annual mWh.												
Real-Time														
Day-Ahead														

Do these represent the full suite of Flex IX approaches and are the descriptions correct?

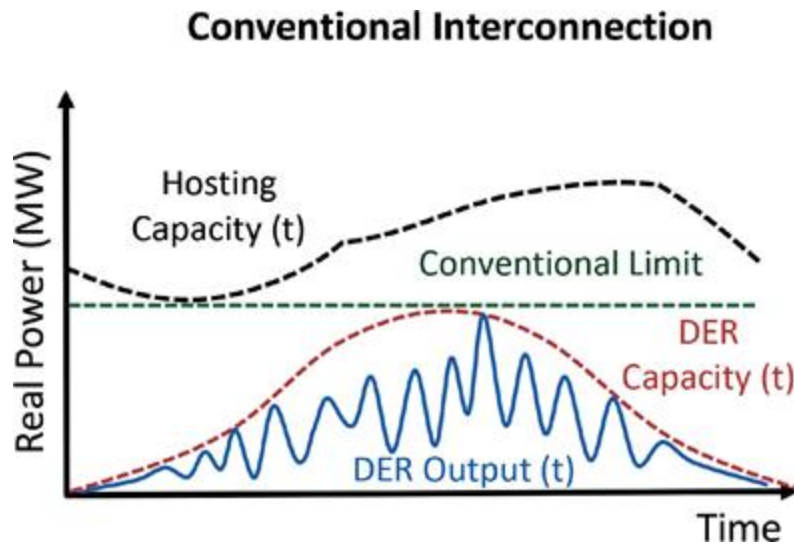
Flex IX Options: Permanent vs. Bridge to Wires

Flex IX Approach	Description	Permanent	Bridge to Wires (Temporary)
Import/Export Limits	DG facility agrees to temporary fixed limits while capacity is built	N/A	Applicable
Scheduled Connections	DG facility connects full nameplate capacity but agrees to pre-defined schedules based on time of day, month, season	Applicable	Applicable
Dynamic Connections	DG facility connects full nameplate capacity agrees to be curtailed up to a certain percentage	Applicable (e.g accepts 5% curtailment and can get financed)	Applicable for temporary high-level of curtailment (ex: 30% curtailment) Applicable for facilities with lower curtailment (e.g 5%) but more unlikely to elect to pay for upgrades.

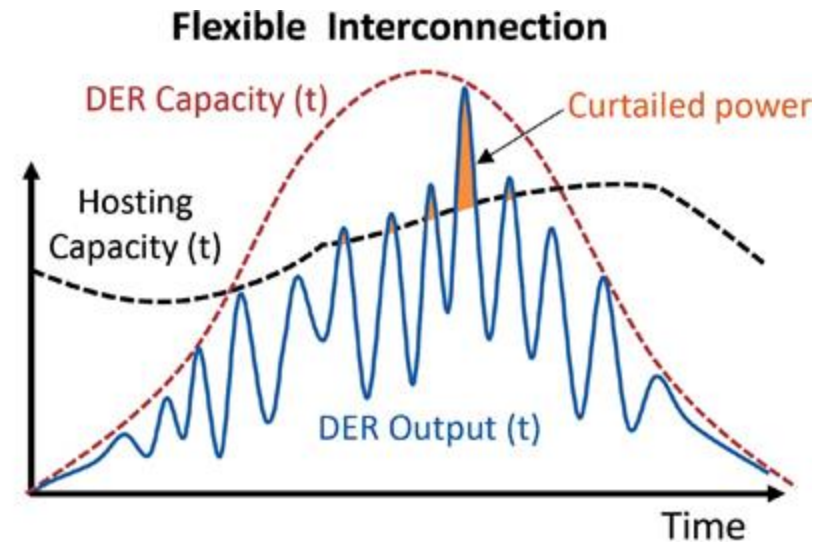
Is permanent vs. bridge to wires to the correct dichotomy? Is the categorization for each approach correct?

Static vs. Dynamic Hosting Capacity

Type of HC Analysis	Static HC	Dynamic HC
Assumption	Assumes HC is the same over time(worst case scenario)	Assumes HC changes over time (true system conditions)
Impact on HC Output	Underestimates HC/Limiting facility export to worst case scenario	More accurately reflects true HC which is greater than Static HC



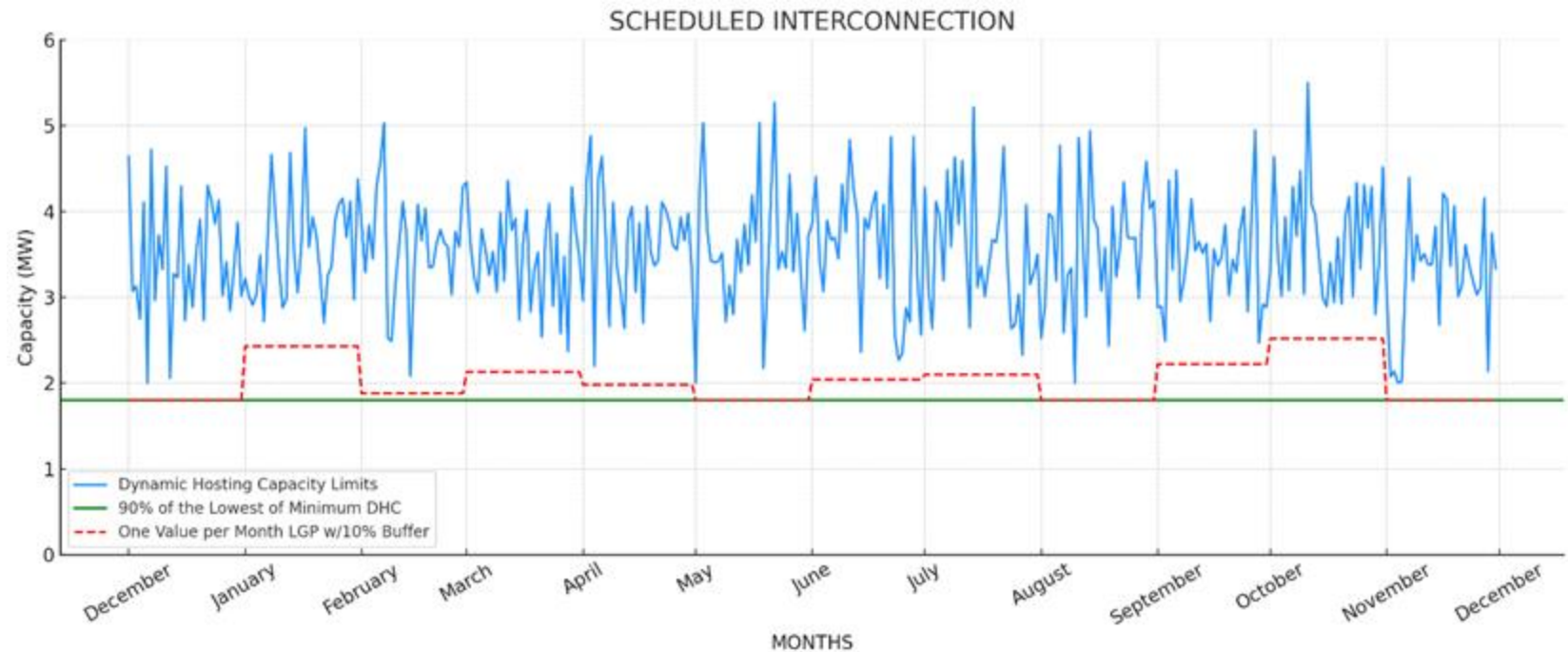
[Adopted from EPRI: Understanding Flexible Interconnection](#)



Scheduled Flex IX Connections

Scheduled Connections are less complex but under utilizes system capacity

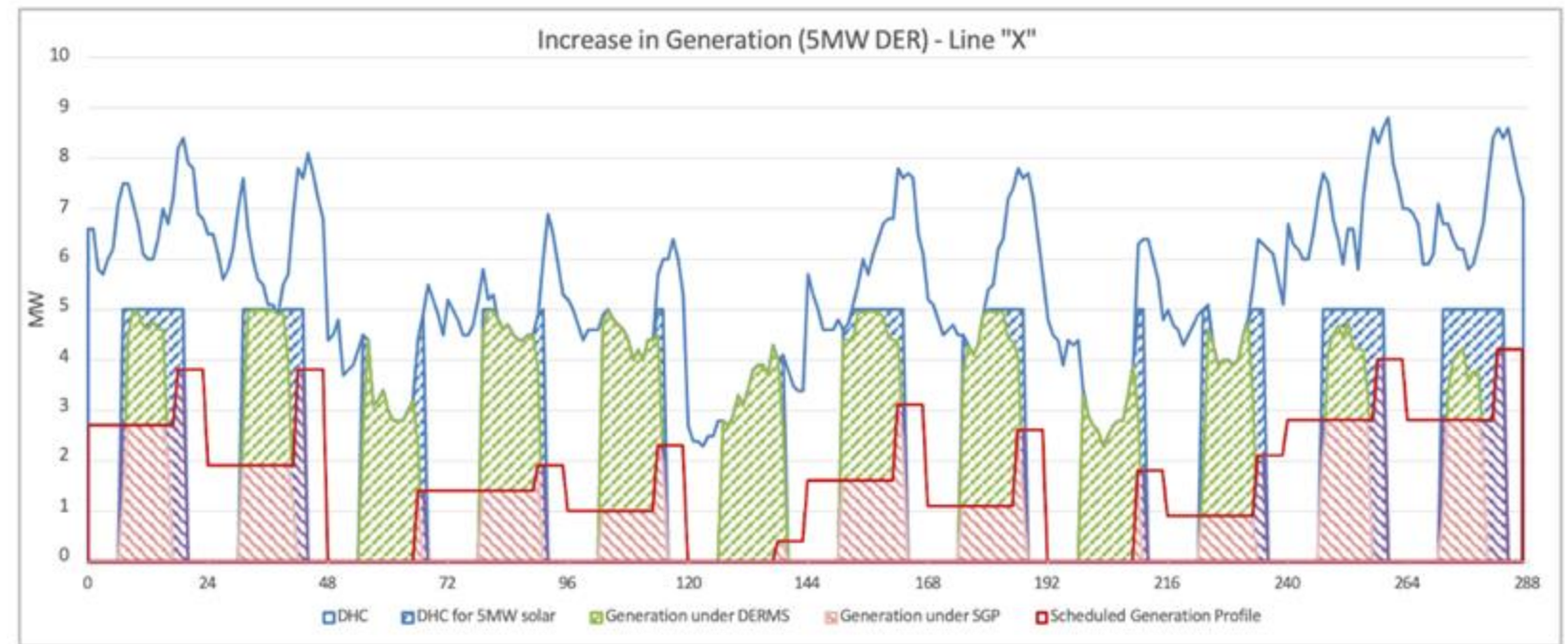
- **Analysis:** Relies on historical data to develop schedules and doesn't reflect real-time conditions
- **Risk management:** Safety factors are usually added to analysis to minimize risk that schedule deviates from real-time conditions
- **DER Control System:** DER operator owned power control system which is pre-programmed to schedule (set & forget) + utility side equipment (relay, gateway etc.)



Dynamic Flex IX Connections

Dynamic Flex IX is more complex but maximizes system utilization

- **Analysis:** Relies on real-time or near-real-time monitoring and forecasting of dynamic hosting capacity
- **Risk management:** Minimizing safety factors needed as curtailment is based on real-time dynamic hosting capacity
 - Schedules may not reflect grid conditions in the future as the system changes but utility still has to live with it driving inefficiencies (schedules could be offered to convert to dynamic in the future)
- **DER Control System:** Utility operated Distributed Energy Resource Management System (DERMS) which directly integrates with and curtails DER facility



Flexible Interconnection: Approach Attributes

Flex IX Approach	MW Capacity Allocation	mWh Target Allocation	Hosting Capacity & Study Analysis	DER Control Approach	DER Penetration	System Utilization/EP S Benefit	Complexity & Cost	Primary DER Beneficiary	ITC Impact
Import/Export Limits	Yes	No	Static	National Grid: Inverter de-rated + EDC Relay Eversource: DER PCS/32 Relay + EDC Gateway device	Low	Low	Low	Solar, solar + storage, standalone storage	TBD
Scheduled Connections	Yes	No	Static	National Grid: DER Power Control System (not required) + EDC Relay Eversource: DER PCS + EDC Gateway device	Medium (Less data points evaluated with buffer added to historical schedules)	Medium (Less data points evaluated with buffer added to historical schedules)	Low	Solar, solar + storage, standalone storage	TBD
Dynamic Connections	No	Yes	Dynamic <i>ISO-NE ASO Studies TBD*</i>	National Grid/Eversource: Facility PCS + EDC DERMS & Gateway	High	High	High (upfront)		TBD
<i>Real-time</i>			Dynamic <i>Coordinated with ISO-NE market participation & distribution grid services*</i>					Solar, solar + storage, standalone storage (additional complexity to participate in wholesale markets)	
<i>Day Ahead</i>			Dynamic <i>Coordinated with ISO-NE market participation & distribution grid services*</i>					Standalone storage. May be applicable standalone storage as they participate in day-ahead markets*	

Flexible Interconnection: Approach Prioritization

- What sizes of DERs should be flexible interconnection options be provided for?
- Are there scenarios where a scheduled Flex IX would be preferred over dynamic Flex IX? (e.g standalone storage because schedules are more predictable for market participation)
- Which flexible interconnection option(s) provide the most value and should be prioritized for program development?

Dynamic Flex IX

Key Scenarios

Dynamic Flex IX: Key Scenarios

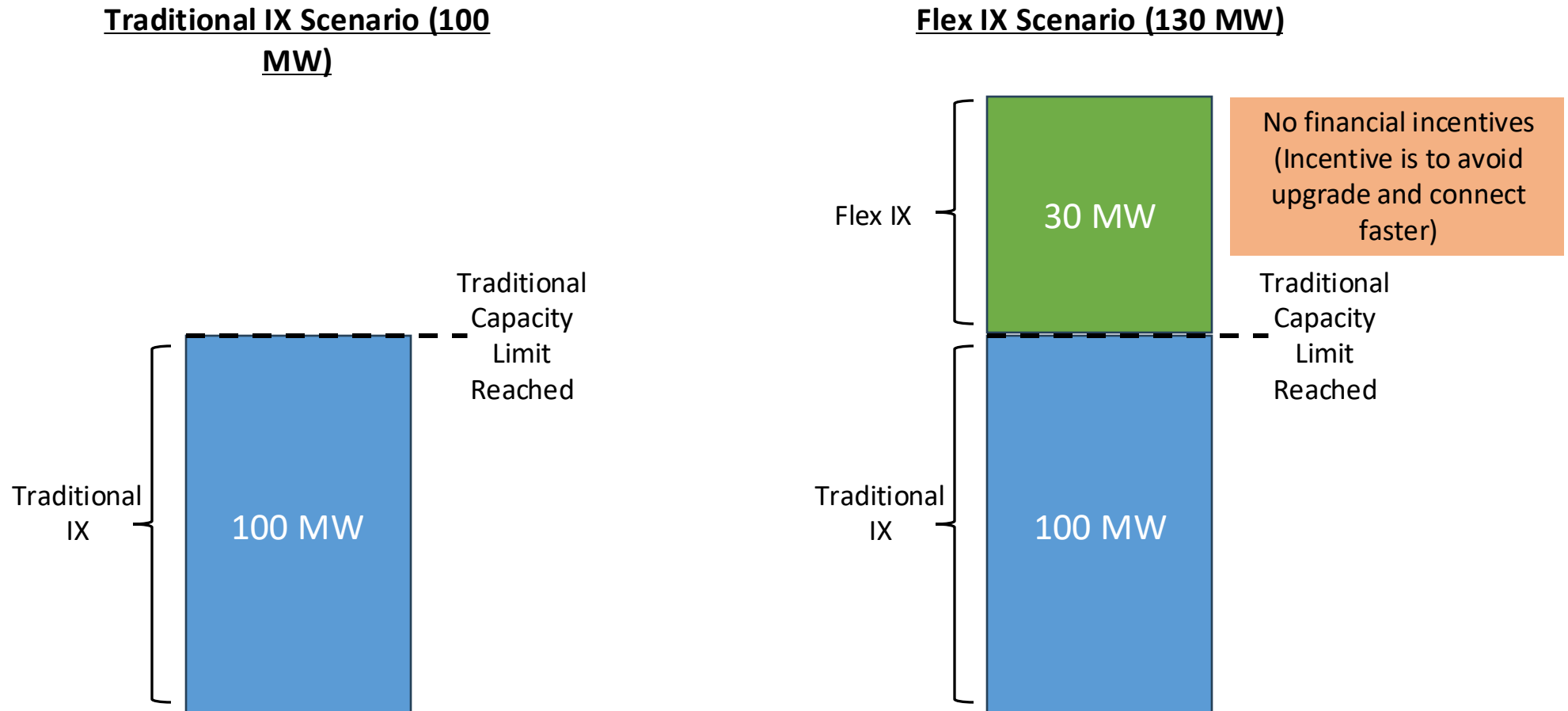
Dynamic Flexible IX can be implemented under several different scenarios:

1. Unlock capacity in constrained areas
2. Unlock capacity in constrained areas while waiting for upgrades (Bridge to wires solution)
3. Unlock additional capacity in unconstrained areas
4. Unlock greater capacity for LTSPP investments
5. Downsize LTSPP investment and unlock same amount of capacity
6. Unlock capacity in constrained areas via converting firm to non-firm

Use Case #1

Example: Substation with 100 MW traditional capacity

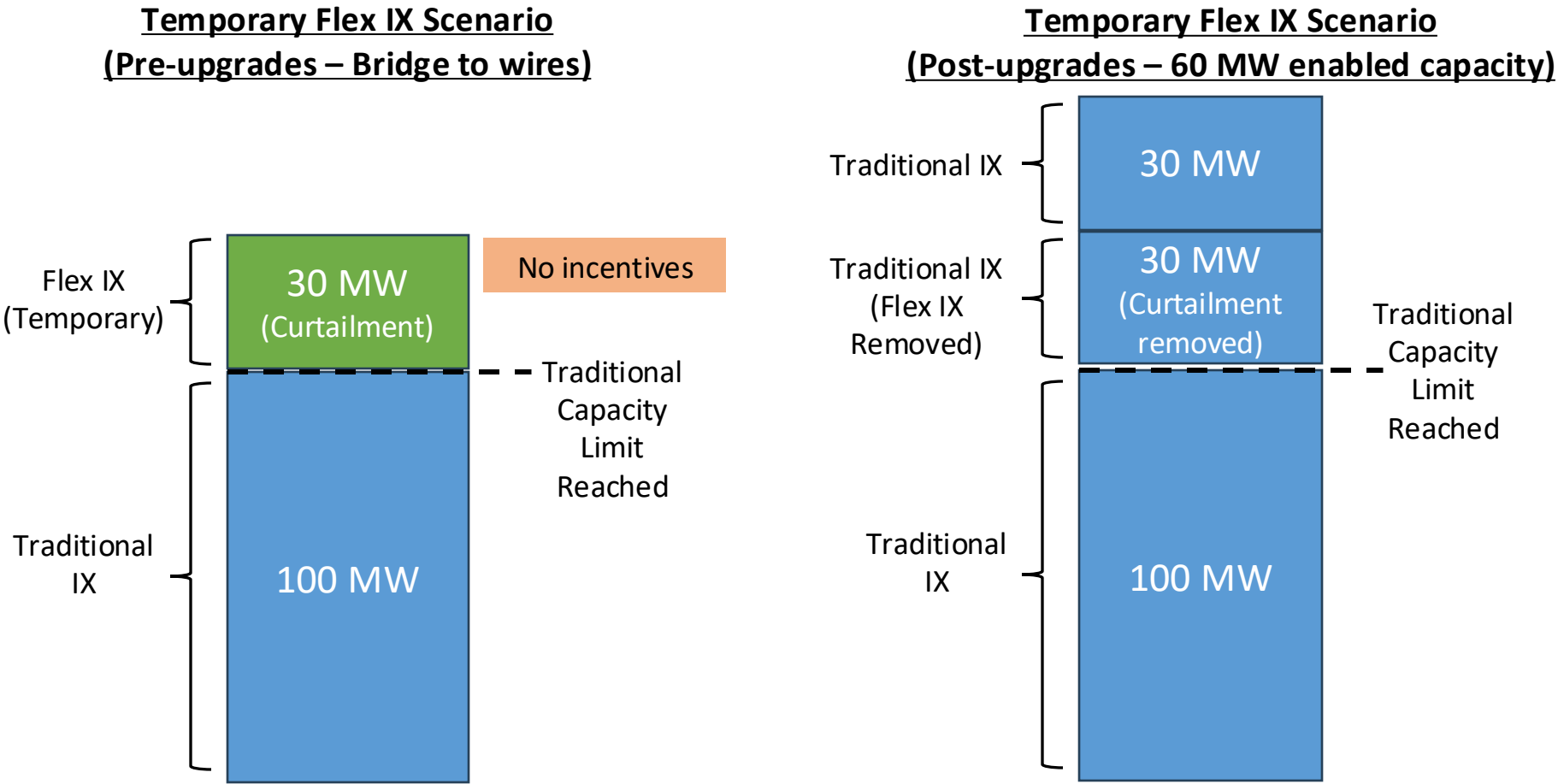
Use Case #1: Unlock Capacity in Constrained Areas (Constrained stations/CIP deferrals)



Use Case #2

Example: Substation with 100 MW traditional capacity w/ 60MW upgrade

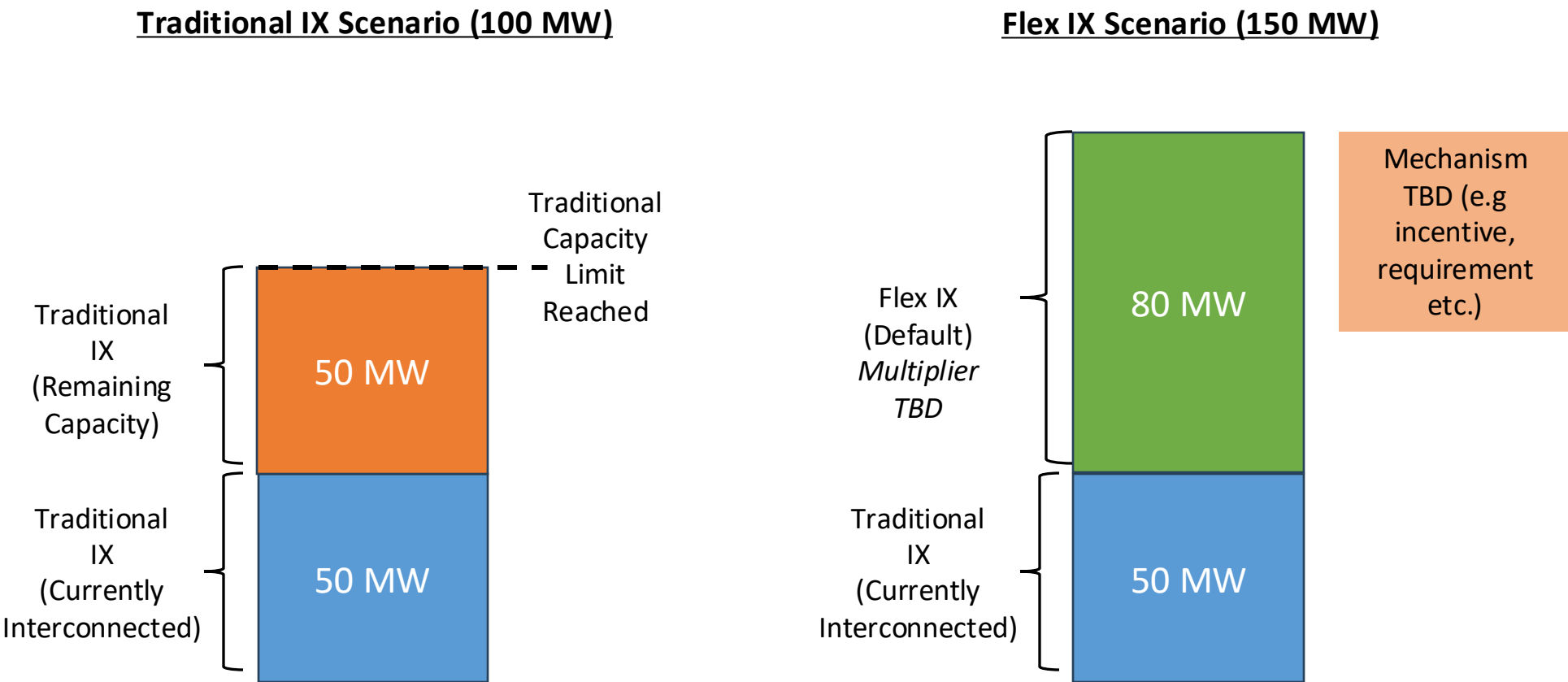
Use Case #2: Connect some capacity in constrained areas while waiting for paid for upgrades to be completed (Bridge to wires solution)



Use Cases #3

Example: Substation with 100 MW traditional capacity

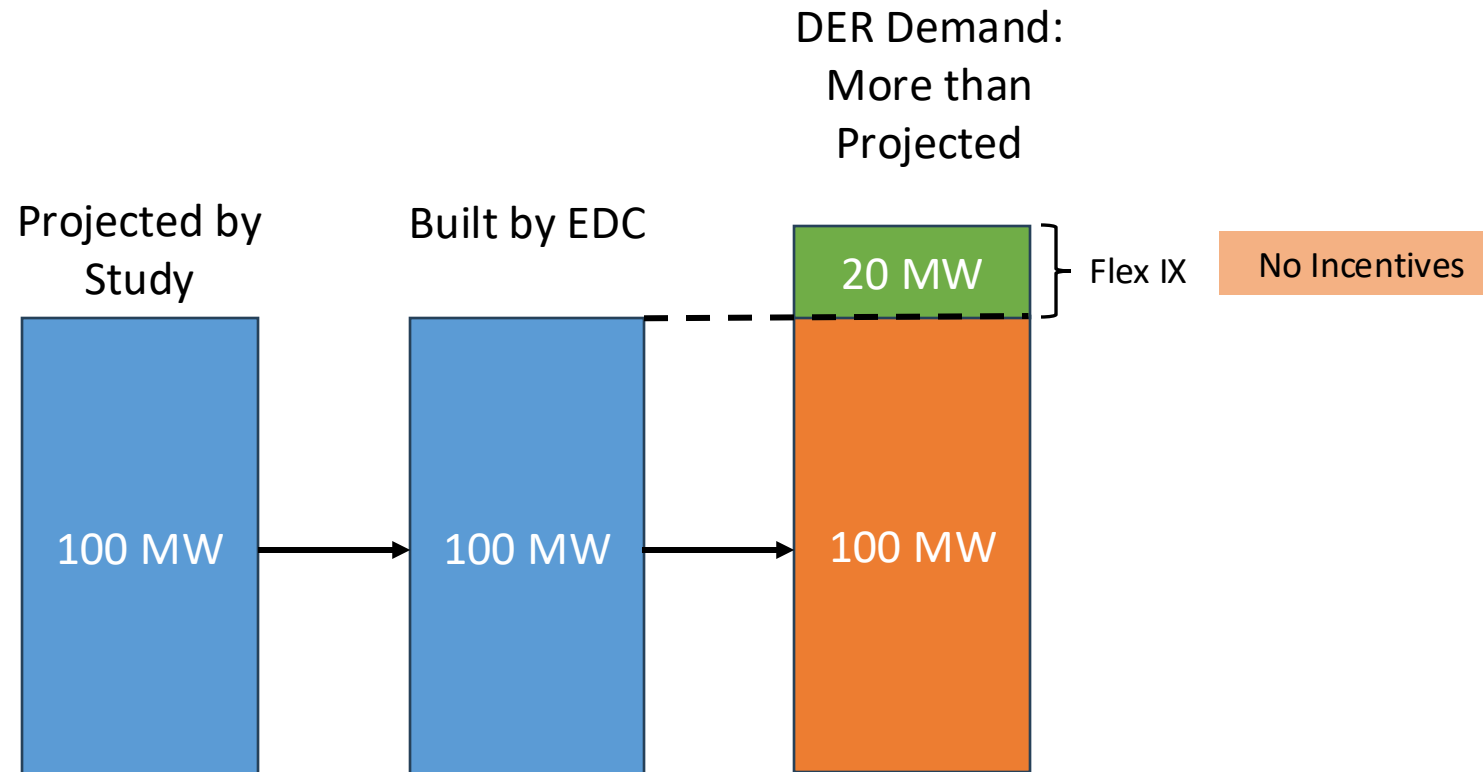
Use Case #3: Unlock Greater Capacity in unconstrained Areas (Default Flex IX)



Use Case #4a: LTSP V1

Example: Substation with 100 MW traditional capacity

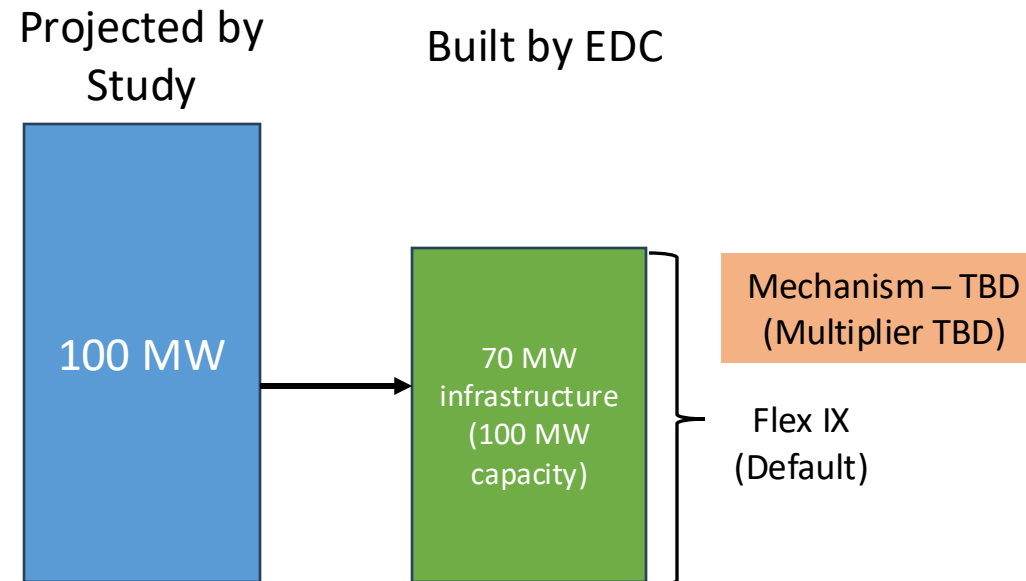
Use Case #4: Unlock Greater Capacity for LTSP investments



Use Case #5: LTSP V2

Example: Substation with 100 MW traditional capacity

Use Case #5: Downsize LTSP investment and unlock same amount of capacity



Default Flex IX

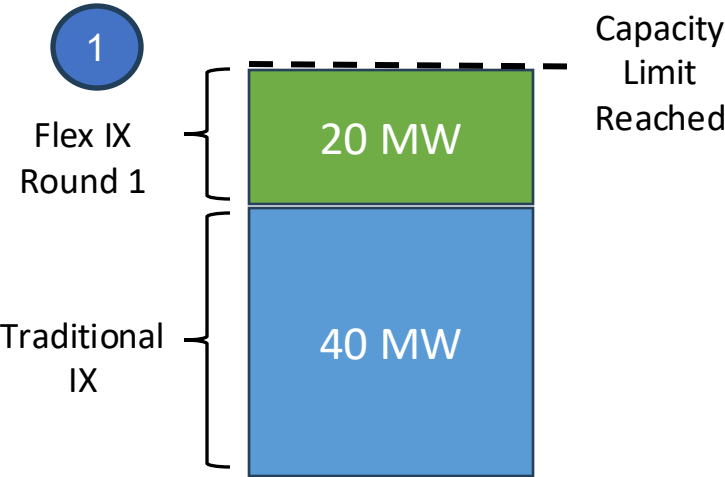
Example: Substation with 100 MW traditional capacity

Use Case #6a: Convert all to Flex

Temporary Flex IX Scenario

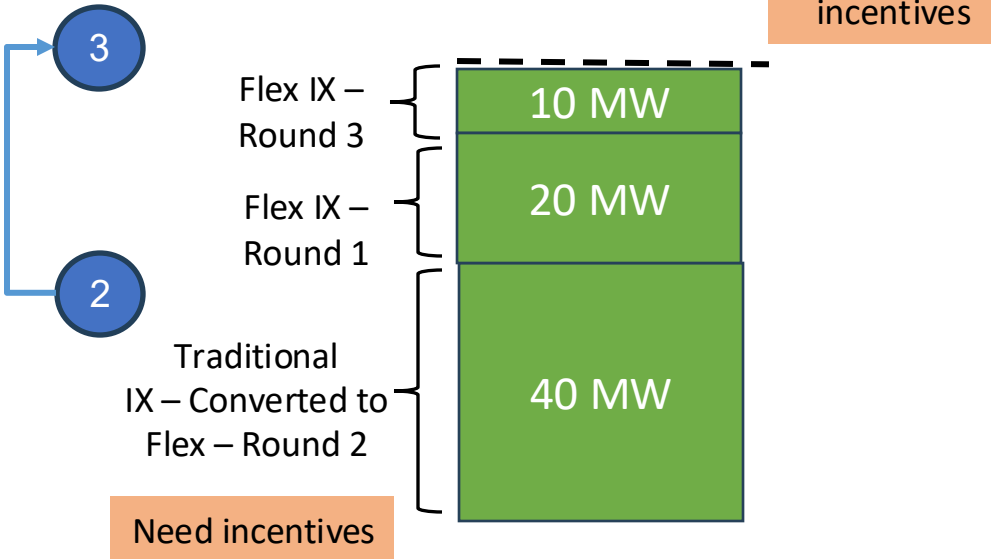
Firm = 40 MW

Flex = 20 MW



All Flex IX Scenario

Flex = 70 MW

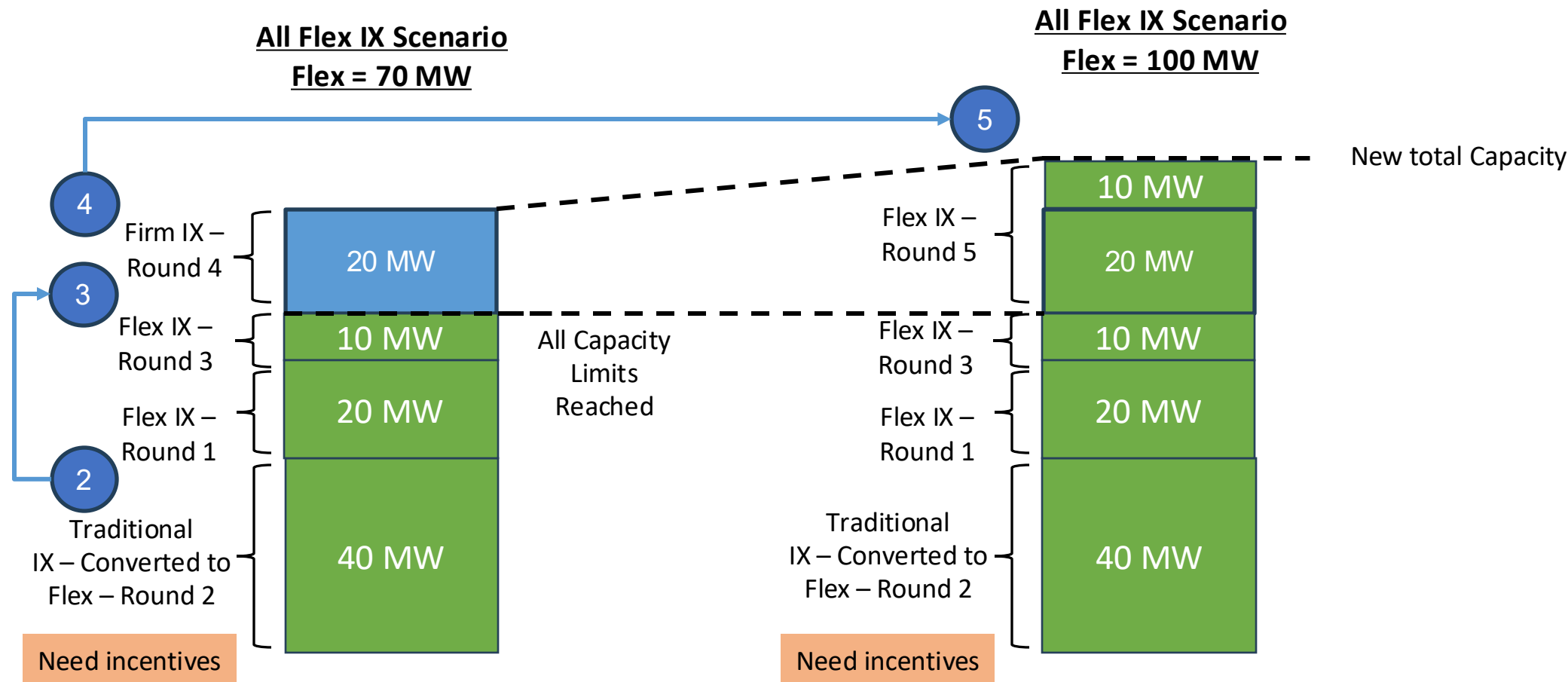


2 to 3 denotes that once firm DERs decides to flex, it unlocks additional flex capacity

Default Flex IX

Example: Substation with 100 MW traditional capacity

Use Case #6b: Substation with 40 MW traditional capacity & 20 MW more firm Capacity built



Dynamic Flex IX: Scenario Prioritization



Which scenarios should be prioritized?

1. Unlock capacity in constrained areas (e.g constrained stations, defer CIPs, fully subscribed CIPs etc.)
2. Unlock capacity in constrained areas while waiting for upgrades - bridge to wires solution (e.g individual projects w/ small upgrades, in-construction CIPs etc.)
3. Unlock additional capacity in unconstrained areas
4. Unlock greater capacity for sized LTSP investments
5. Downsize LTSP investment and unlock same amount of capacity
6. Unlock capacity in constrained areas via converting firm to non-firm

EDC Flex IX Baseline

Discussion – Details provided next meeting

Next Steps & Roadmap

Proposed Determinations (Near-term Plan)

- **Prioritize Dynamic Flex IX via DERMS**
- **Prioritize solar + storage vs. standalone storage facilities (not loads)**
- **Prioritize DER facilities <1MW to minimize risk of ASO studies + receive ITC**
 - Designing program to prioritize ITC will be discussed at future meeting
- **Prioritize Dynamic Flex IX Scenarios #1 & 2 in following priority order:**
 1. Unlock capacity in constrained areas for constrained stations and CIP deferral candidates
 2. Unlock capacity for bridge to wires for individual projects with small upgrades
 3. Unlock capacity for bridge to wires for in-construction CIPs (last resort)
 4. Unlock capacity in constrained areas for fully subscribed CIPs (not immediate need)
- **Develop first iteration of program in a manner that *minimizes need for DPU review & approval* to address ITC expiration**
- **EDC specific plans** (informed by final program design details)
 - TBD – to be discussed at next meeting based on existing and future capabilities

Requires common
technical capabilities,
program design
+
No incentives needed
+
Prioritizes ITC timelines

Roadmap (Near-term Plan)

1. **Develop programmatic framework that identifies key elements and open questions (Oct 2025 – present at next meeting)**
 - Engage with ComEd & National Grid NY to inform framework
 - Engage with DER industry to identify priority locations and substations
 - Key elements may include: Curtailment strategies (% curtailment, curtailment allocation methodology, curtailment study template), financing/curtailment risk management, integration into IX process, identifying & prioritizing substations, program launch, DERMS scalability & long-term functionality etc.)
2. **Design & host in-person workshop to address programmatic details (Oct-December 2025)**
 - May include forum to identify priority locations and substations (TBD)
 - Establish workshop dates (December target)
3. **Develop draft Flex IX straw proposal (Oct 2025-Jan 2026)**
 - Iterative draft as subgroup works through roadmap + workshops
 - Addresses near-term plan for program
 - Addresses future process to expand & iterate on program (including grid compensation fund)
 - Incorporates lessons learned & existing templates from ComEd & National Grid NY programs where appropriate
4. **Notify IIRG & present Flex IX straw proposal (Jan-Feb 2026)**
5. **File with and brief DPU (Q1 2026)**
6. **Launch first iteration of Flex IX program (TBD)**

Thank You!

