Integrating Customer Operated Distributed Generation Into Distribution Planning

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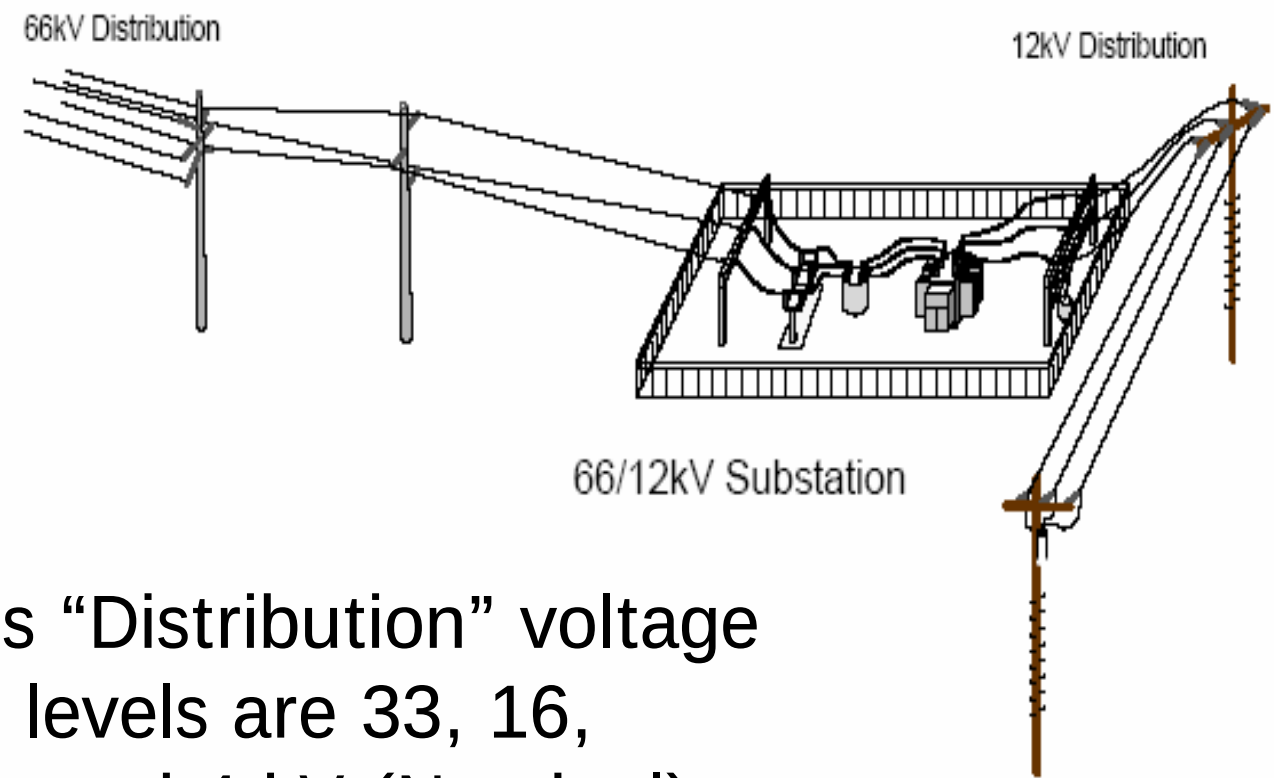
Using Customer DG to Defer Distribution System Upgrades

- CPUC Order D.03-02-068 directed utilities to evaluate distributed generation (“DG”) as an alternative to upgrading or expanding their distribution systems
  - This presentation is intended to facilitate an understanding of SCE’s current evaluation and implementation methodology and the terms it has proposed for a Demand Limitation Agreement that allows utility customers with DG to participate in the process

Using Customer DG to Defer Distribution System Upgrades

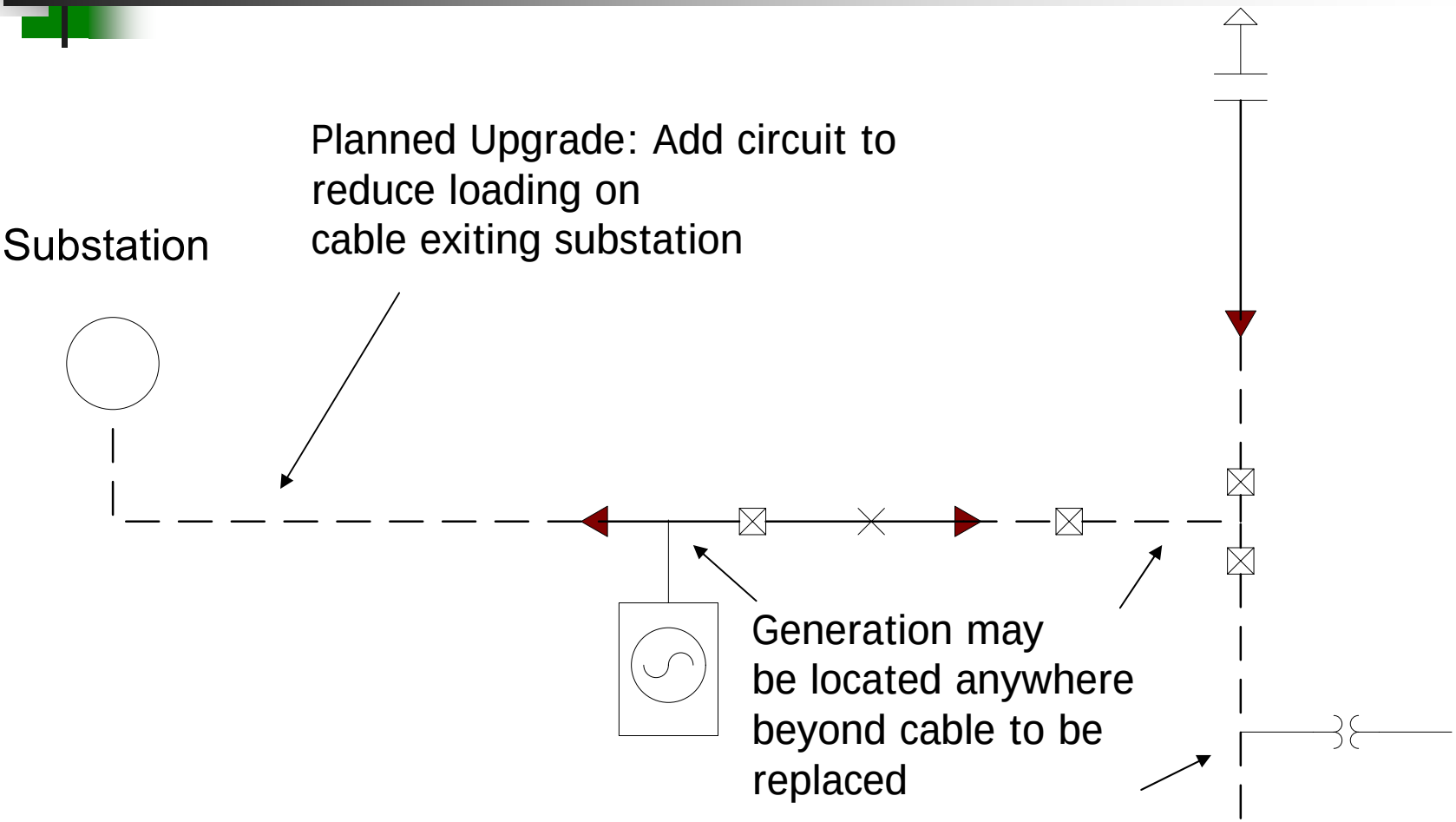
- The CPUC has established criteria for using DG to defer distribution system improvements
- The DG alternative must:
  - Be located in the right place
  - Provide sufficient capacity
  - Be installed and operational
  - Provide physical assurance

Distribution Systems

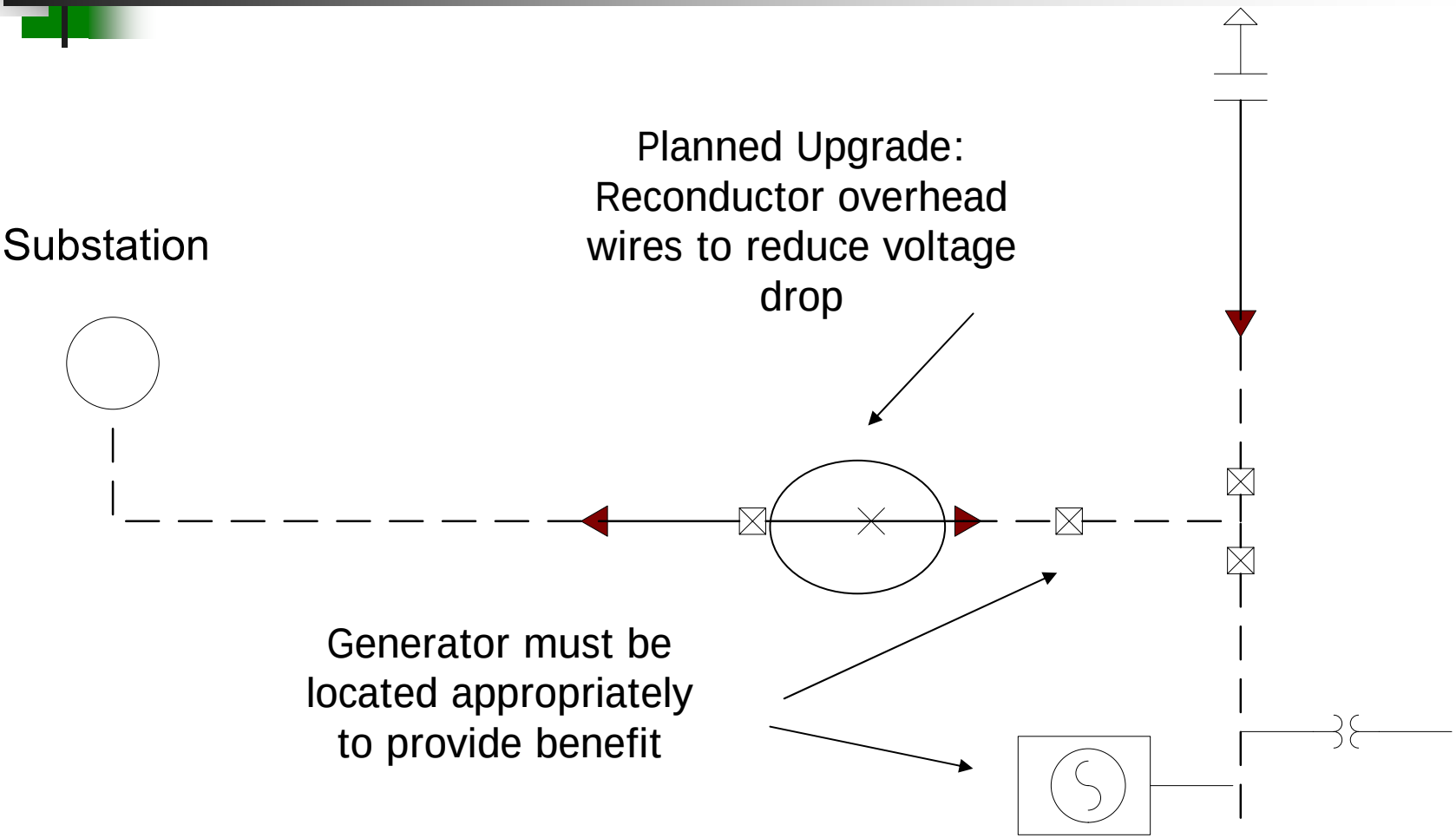


SCE's "Distribution" voltage levels are 33, 16, 12, and 4 kV (Nominal)

Located in the Right Place



Located in the Right Place



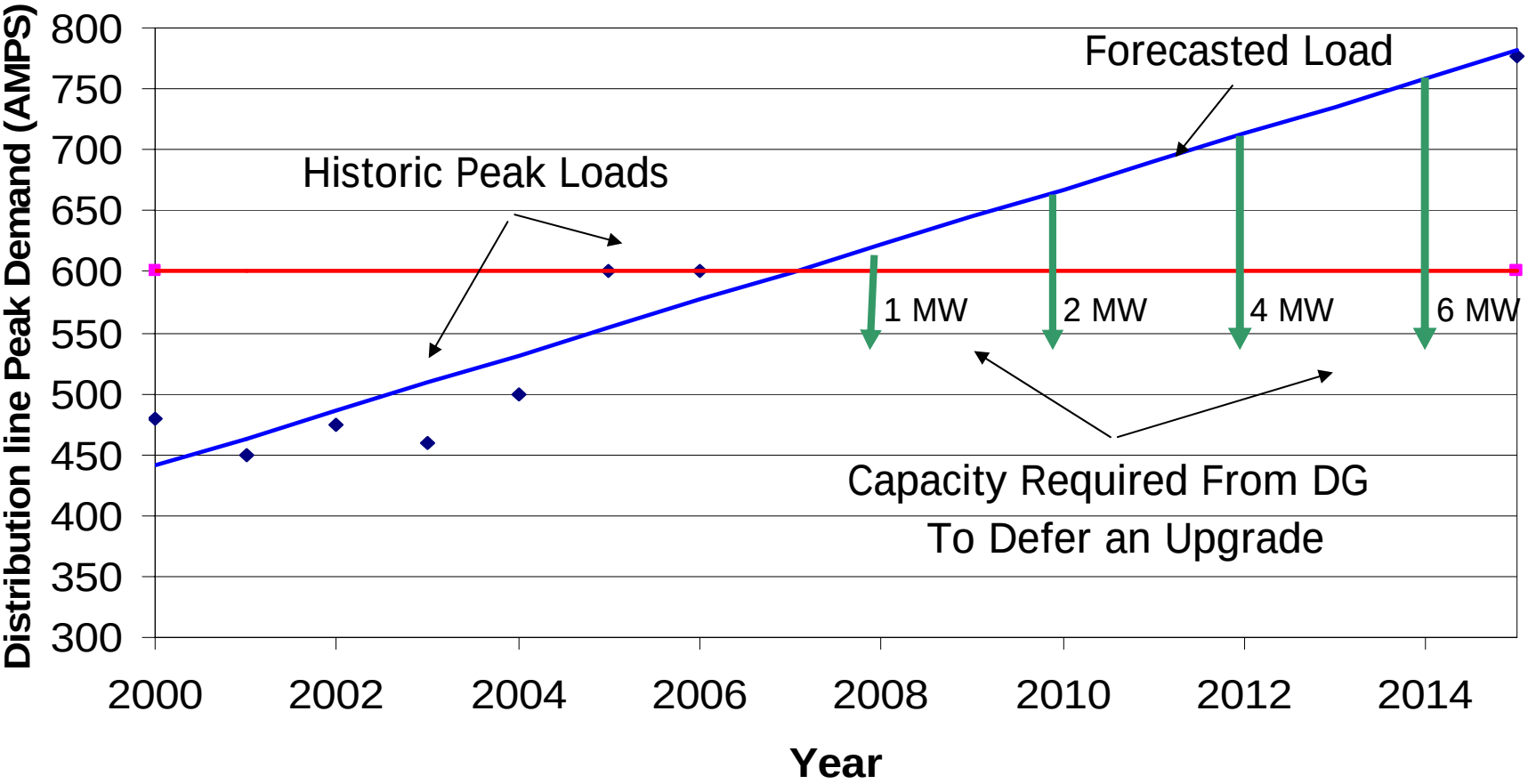
Provide Sufficient Capacity

- 12 and 16 kV circuits are planned to normally carry about 400 amps, or 9 and 12 MW, respectively
  - In emergencies, 12 and 16 kV circuits can carry up to 600 amps, or 13 and 17 MW, respectively
  - 4 KV circuits are planned to normally carry about 300 amps, or 2.5 MW
- Distribution substations normally consist of multiple 28 MVA transformers

Provide Sufficient Capacity

- Due to the “robustness” of SCE’s distribution systems, significant amounts of DG will typically need to be provided on a single circuit or substation to allow a 2 – 3 year deferment
  - 4 kV lines: 1 – 2 MW
  - 12 and 16 kV Lines : 2 – 5 MW
  - 28 MVA transformers: 5 – 10 MW

Provide Sufficient Capacity



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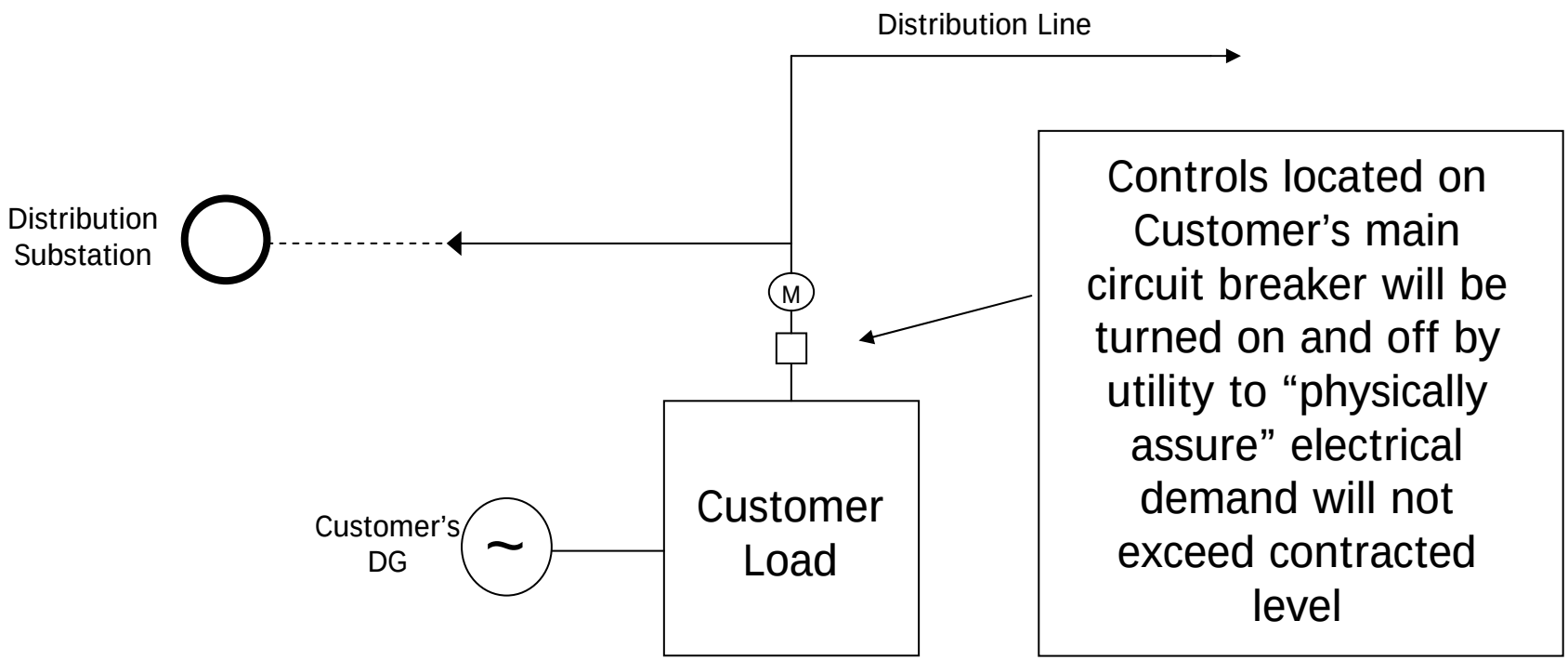
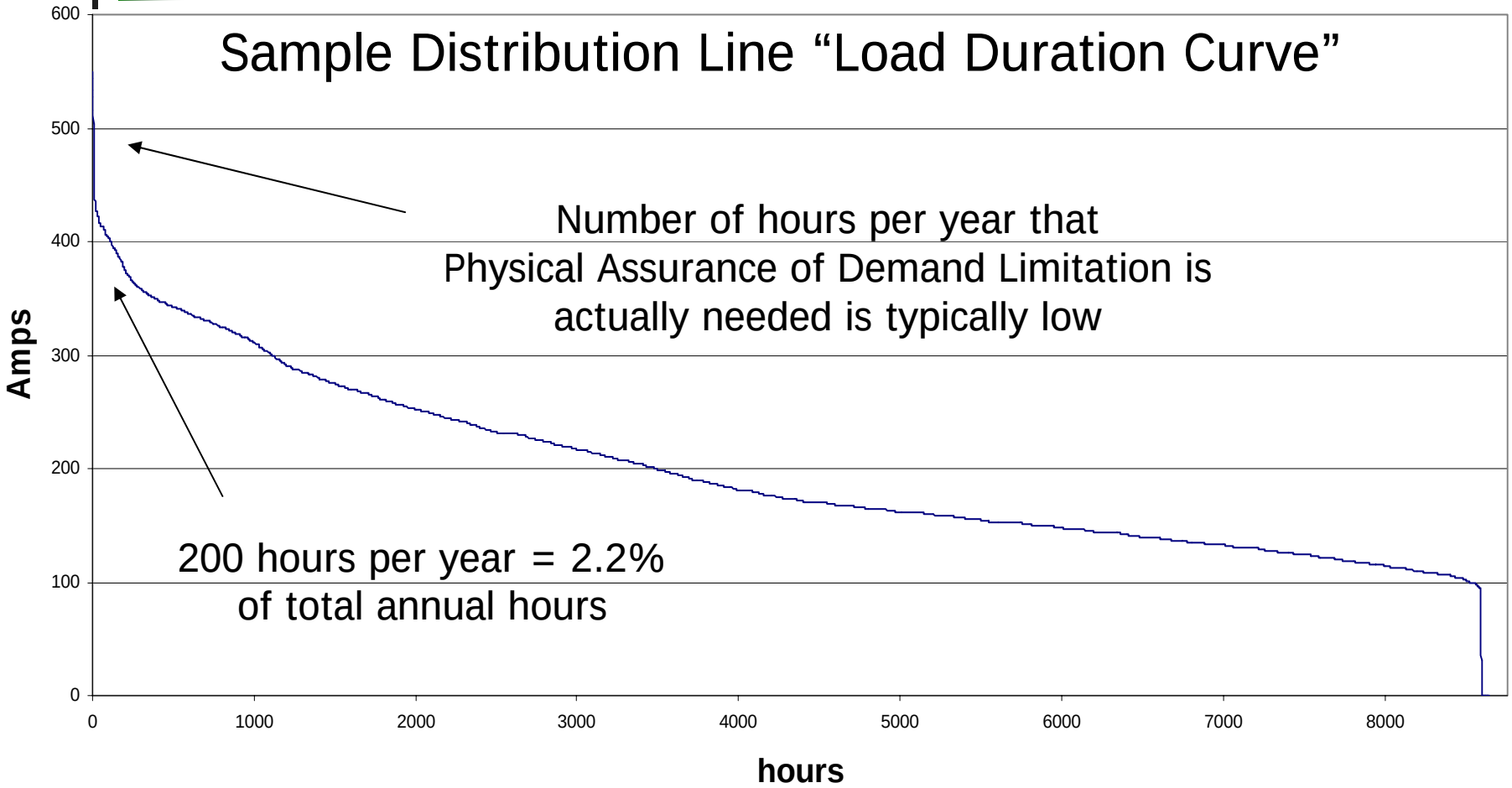
Provide Physical Assurance



Provide Physical Assurance



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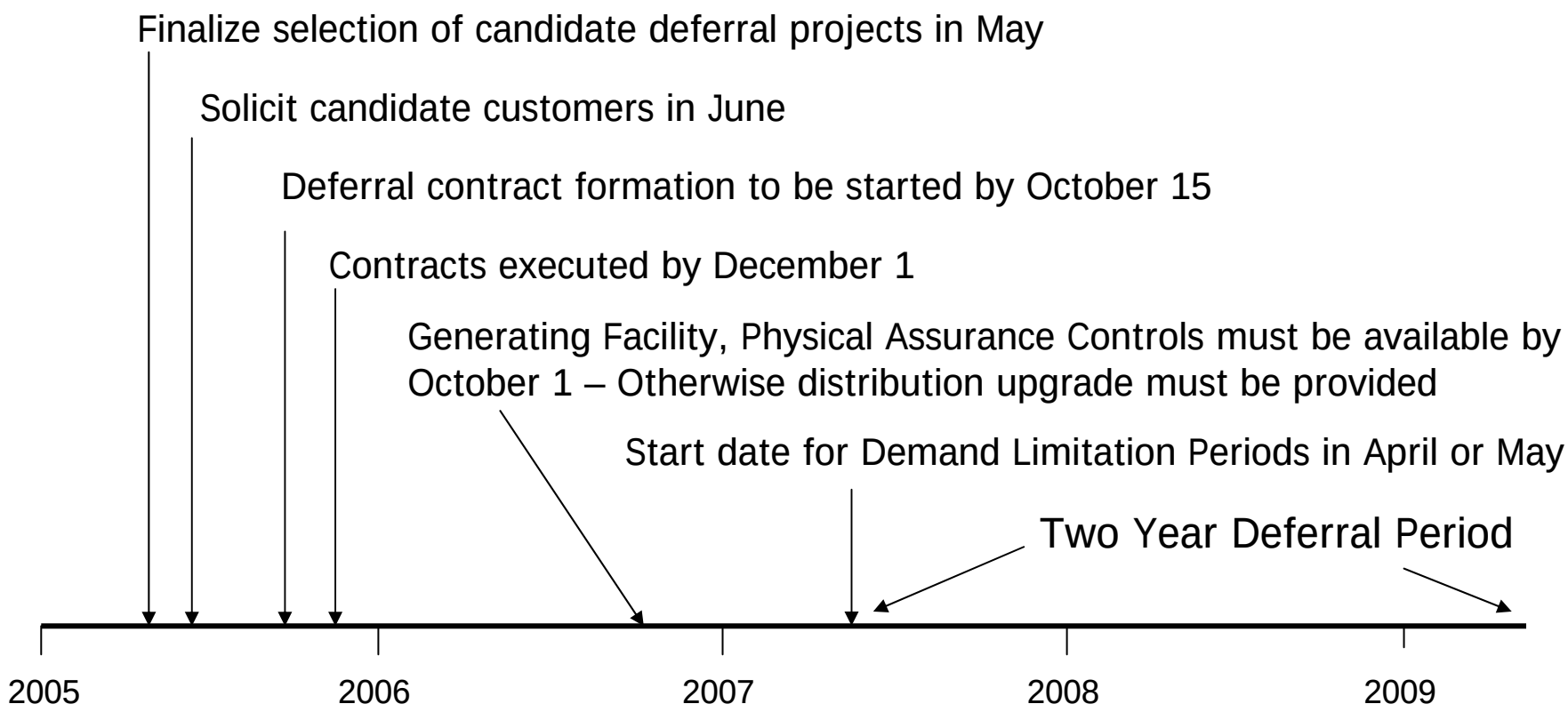
Installed and Operational

Timing proposed to defer planed upgrades with 2007 operating dates



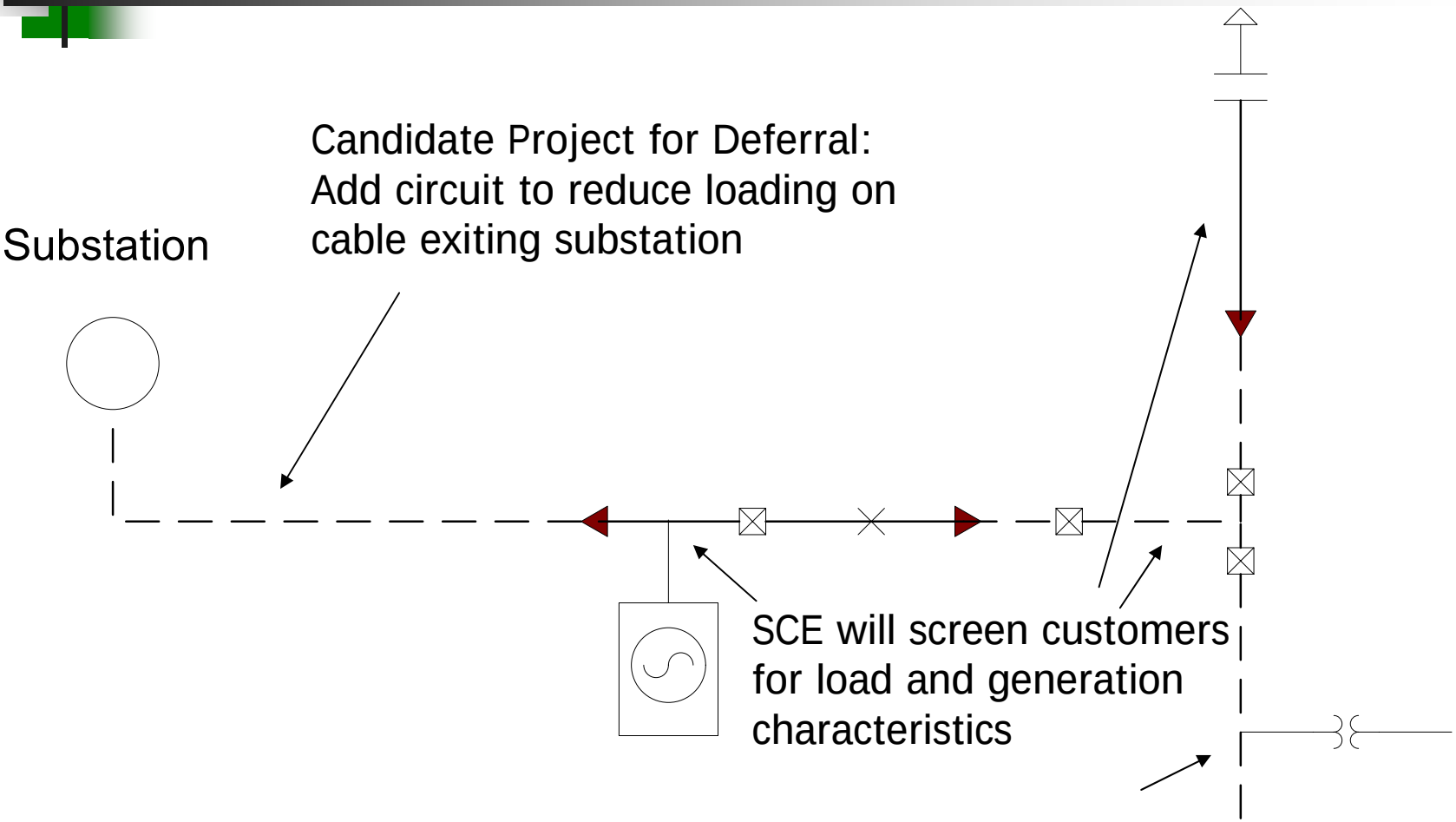
Prospective Location Screening Process

- During its annual distribution planning update, SCE upgrade/expansion projects identified for construction during the following three years will be screened for certain characteristics, including:
  - Incremental capacity requirements
  - Proposed “standard” capacity addition
  - Estimated costs of providing capacity addition
  - Other factors such as equipment maintenance or replacement requirements, secondary or complementary uses for distribution system upgrade
  - Estimated load growth for the next two or three years

Prospective Customer Screening Process

- Candidate DSP projects will be compared to the load characteristics of existing customers that may be sized and situated (electrically) in locations that may, if the customer has or installs DG, provide an opportunity to defer the DSP project

Locating Candidate Customers



Soliciting the Interest of Candidate Customers

- Where DG appears be a potential alternative to a distribution system upgrade, SCE will contact customers appearing to be possible DG Demand Limitation Program participants and solicit their participation
- Prospective deferral project information will also be made available to others expressing an interest in SCE's activities
- SCE's public information offering will include a description of general program requirements and benefits and the general locations where candidate customers and projects have been identified

Providing Information to Allow Productive Negotiations

- Customers and parties interested in facilitating Customer DG installations will be required to enter into Non-Disclosure Agreements (NDA) with SCE to obtain project specific information
- For parties with NDAs, SCE will provide project specific requirements, including:
  - Specific locational requirements
  - Capacity and term requirements
  - Demand limitation requirements
  - Market reference pricing

Negotiating Demand Limitation Agreements

- Depending on the number of customers identified with the potential to defer a distribution system upgrade, SCE will either negotiate terms directly or request proposals from multiple candidates
- If requested, SCE will assist its customers with evaluating the economics of installing DG for their own use and distribution deferral purposes

Distribution Deferral Demand Limitation Agreements

- Parties
  - Due to “physical assurance” requirements, agreements must be between the utility and utility customers
- Specific Demand Limitation Requirements
  - Response time, annual and daily demand limitation requirements, scheduled outage day limits, and expected periods of operation will be negotiated
- Limitations on Initiating Physical Assurance Requirements
  - A description of the deferred upgrade and a description of the conditions for initiating physical assurance requirements will be included

Distribution Deferral Demand Limitation Agreements

- Physical Assurance Control Hardware
  - Customer responsible for own facilities, but utility is given control and assurances
- Performance Payments
  - Total payments based on utility's savings, Payments made monthly, pending demand limitation performance
- Contract Term and Termination Provisions
  - 2 year minimum deferment, extensions possible, capacity obligations fixed