Below is a detailed summary of **NEC 2020 Article 230.85**, focusing on ***Service Labeling*** requirements for emergency disconnects in one- and two-family dwellings, followed by the implications for generator installations and key points for electrical inspectors to verify during inspections. The information is organized into presentable bullet points for clarity and is tailored to support your presentation to electrical inspectors.

NEC 2020 Article 230.85 – Service Labeling for Emergency Disconnects

Overview

- **Purpose (230.85):** Article 230.85 mandates an emergency disconnect for one- and two-family dwelling units to allow first responders to quickly and safely de-energize the electrical service, reducing risks during emergencies (e.g., fires, rescues). This requirement complements generator installation safety measures, such as those in Article 445.18(D).
- **Applicability:** Applies to new installations and replacements of service equipment in one- and two-family dwellings. Existing services are exempt unless modified or replaced (subject to AHJ interpretation).

Specific Requirements

- **Emergency Disconnect Location (230.85(A)):**
    - The disconnect must be installed outside the dwelling at a readily accessible location, typically near the service entrance point or utility meter.
    - Must be suitable for use as service equipment (e.g., listed and marked as service-rated per UL standards).
    - Can serve as the main service disconnect or an additional disconnect if a service-rated transfer switch or other equipment is used.
- **Types of Disconnects Permitted (230.85(B)):**
    - **Service Disconnect:** A main service disconnecting means that de-energizes the entire premises, often integrated with the service panel or meter base.
    - **Feeder Disconnect:** A disconnect for a feeder supplying a panelboard, typically used when the main service disconnect is elsewhere (e.g., at a transfer switch).
    - **Other Disconnecting Means:** Any listed device suitable for use as a service disconnect, such as a manual transfer switch or a generator disconnect, provided it meets 230.85 requirements.
- **Labeling Requirements (230.85(C)):**

- The emergency disconnect must be clearly labeled to identify its function for first responders. The label must:
    - Be permanently affixed (e.g., engraved or adhesive label resistant to weather).
    - Use the exact wording: **"EMERGENCY DISCONNECT"** in letters at least 1/8 inch high.
    - Include additional descriptors based on the disconnect's function:
        - If it de-energizes the entire premises: **"SERVICE DISCONNECT"**.
        - If it only disconnects specific loads: **"METER DISCONNECT"** or **"FEEDER DISCONNECT"**.
        - Example: A main service disconnect label might read: "EMERGENCY DISCONNECT – SERVICE DISCONNECT."
    - Be visible and legible in all lighting conditions (e.g., reflective or illuminated if required by AHJ).

- **Additional Requirements for Generators (Cross-Reference with 445.18(D)):**
    - If a generator is installed, an additional emergency shutdown device for the generator's prime mover (engine) must be readily accessible outside the dwelling (445.18(D)).
    - This generator shutdown complements the emergency disconnect in 230.85, ensuring both utility and generator power can be safely isolated.
    - For outdoor generators, a lockable disconnect within sight of the building may eliminate the need for an additional disconnect at the building entry (per 700.12(B)(6), 701.11(B)(5), 702.11).

Implications for Generator Installations

- **Enhanced Safety for First Responders:** The emergency disconnect ensures utility power can be quickly isolated, while the generator shutdown (445.18(D)) addresses on-site power sources, reducing electrocution or backfeed risks during emergencies.
- **Integration with Transfer Switches:** If a service-rated transfer switch is used for the generator, it can double as the emergency disconnect, provided it is outside, readily accessible, and properly labeled per 230.85(C). Non-service-rated transfer switches require a separate service disconnect ahead of the switch.
- **Neutral-Ground Bonding:** Bonding must occur only at the emergency disconnect (if it's the main service disconnect) to prevent ground-fault issues. Downstream panels, including those fed by generators, must have neutral and ground separated (per 250.24).

- **Coordination with Article 445:** Generator installations must align with 230.85 by ensuring the emergency disconnect and generator shutdown are both accessible and clearly labeled, avoiding confusion for first responders.
- **Increased Installation Complexity:** For dwellings with generators, installers must coordinate the placement and labeling of both the emergency disconnect (utility power) and the generator shutdown, potentially increasing costs and planning time.
- **Local AHJ Variations:** Some jurisdictions may have stricter requirements (e.g., specific label materials, additional signage, or exemptions for existing services). Installers must verify with the AHJ to ensure compliance.

Key Points for Inspectors to Verify

- **Location Compliance:**
  - Confirm the emergency disconnect is outside the dwelling and readily accessible (e.g., not obstructed by landscaping, gates, or locked enclosures).
  - Verify the generator shutdown (if applicable) is also outside and accessible per 445.18(D).
- **Labeling Accuracy and Visibility:**
  - Check that the disconnect has a permanent label with the exact wording “EMERGENCY DISCONNECT” and the appropriate descriptor (“SERVICE DISCONNECT,” “METER DISCONNECT,” or “FEEDER DISCONNECT”).
  - Ensure letters are at least 1/8 inch high, legible, and visible in low-light conditions (e.g., reflective or near lighting if required by AHJ).
  - Confirm generator shutdown devices are labeled to indicate their function (e.g., “GENERATOR EMERGENCY SHUTDOWN”).
- **Equipment Suitability:**
  - Verify the disconnect is listed as service equipment (e.g., UL 98 or UL 869A) and suitable for the environment (e.g., NEMA 3R for outdoor use).
  - Ensure the transfer switch (if used as the disconnect) is service-rated and properly bonded.
- **Electrical Compliance:**
  - Confirm neutral-ground bonding occurs only at the emergency disconnect (if it’s the main service disconnect) and is separated in downstream panels or generator-fed systems.

    - Check that conductors from the generator to the transfer switch or disconnect meet ampacity requirements (115% of nameplate current per 445.13(A)).

- **Generator Integration:**
    - Ensure the generator's lockable disconnect (445.18(A)) and emergency shutdown (445.18(D)) are installed and functional, especially for dwellings with backup power.
    - Verify that the generator disconnect is within sight of the building or that an additional disconnect is provided at the building entry (per 700.12(B)(6), 701.11(B)(5), 702.11).
- **Coordination with Other Articles:**
    - Cross-check compliance with Articles 445 (Generators), 700 (Emergency Systems), 701 (Legally Required Standby), and 702 (Optional Standby) to ensure the entire system is code-compliant.
    - Confirm surge protection devices are installed for service upgrades (230.67), as generator operation may introduce voltage fluctuations.
- **AHJ Conformance:**
    - Verify any local amendments or interpretations (e.g., exemptions for existing services or additional labeling requirements) have been followed.
    - Ensure the installer has provided documentation (e.g., permits, equipment specs) to support compliance.

Presentation Notes

- **Highlight Safety Benefits:** Emphasize that 230.85 protects first responders by ensuring clear, accessible, and properly labeled disconnects for both utility and generator power.
- **Use Visual Examples:** Show images of compliant labels (e.g., "EMERGENCY DISCONNECT – SERVICE DISCONNECT") and non-compliant setups (e.g., obstructed disconnects or missing labels) to illustrate expectations.
- **Address Common Issues:** Note frequent violations, such as incorrect labeling, improper bonding, or inaccessible disconnects, to guide inspectors on what to prioritize.
- **Stress AHJ Collaboration:** Encourage inspectors to clarify local requirements with installers early to avoid rework, especially for generator-integrated systems.

This summary covers all aspects of NEC 2020 Article 230.85, its implications for generator installations, and specific inspection points. For further details, refer to NFPA 70 (NEC 2020) or consult the local AHJ.