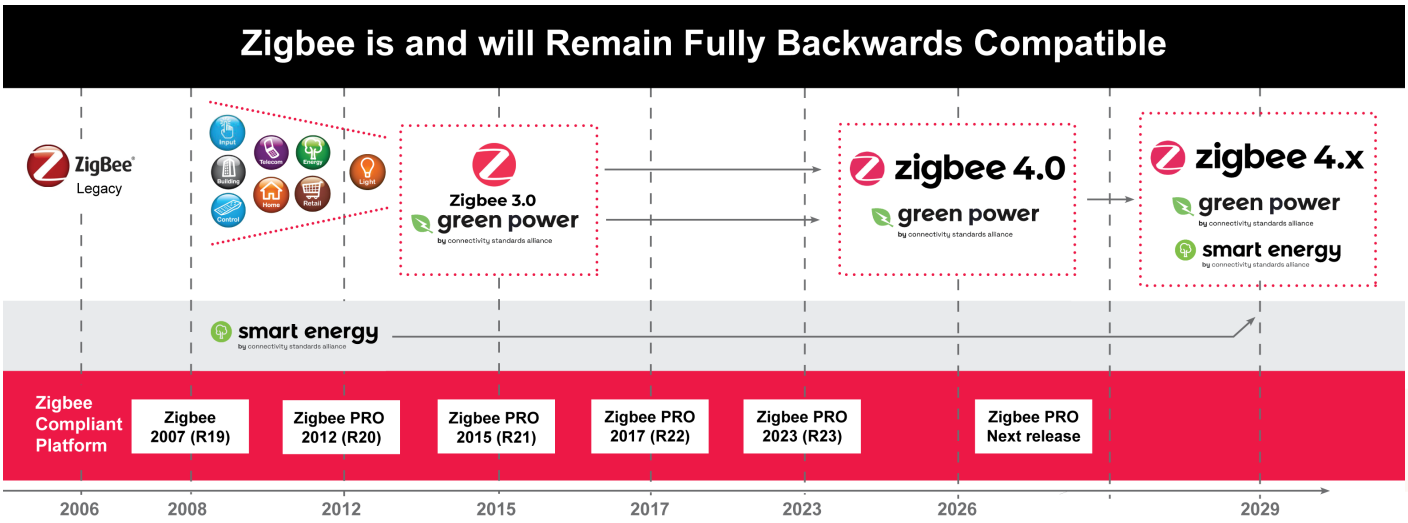
zigbee 4.0 Foundation for Harmonizing with Smart Energy

When Zigbee 3.0 launched, it unified previously separate application profiles, including Home Automation, Light Link, Building Automation, and others under a common Zigbee specification and certification framework, while Smart Energy remained separate. Zigbee 4.0 begins the next stage of that evolution, laying the foundation for harmonizing traditional Zigbee and Smart Energy within a unified ecosystem. This release establishes the framework for greater interoperability and a more consistent device and network experience, with subsequent Zigbee 4.x updates expected to progressively complete the specification, testing, and certification changes needed for full harmonization, all while maintaining backward compatibility with existing Zigbee 3.0 and Smart Energy devices.



Unified Security Model

- Aligns Smart Energy (SE) key management with Zigbee PRO / Zigbee 4.0
- SE security becomes policy-driven, not a separate stack behavior
- Introduction of cryptographic agility
- Progressive enhancements to meet regulatory requirements (CRA, PQC)

Consistent Key Handling

Trust Center remains the single authority for onboarding:

- Network key distribution, update, and revocation

Peer-to-peer link key establishment

Harmonized Commissioning And Device Library

- Common onboarding flow across Smart Energy, Zigbee 4.0, and Zigbee 3.0
- Security level enforced via Trust Center policy and restricted mode
- Super set of device types across Zigbee 4.0 and Smart Energy

Improved Lifecycle Management

- Clear rules for key updates, recovery, and long-lived deployments
- Trust Center swap-out supported without re-provisioning devices
- No degradation of security
- Maintains SE-grade cryptographic strength and authorization guarantees

zigbee 4.0 Foundation for Harmonizing with Smart Energy

Harmonization expands what Zigbee 4.0 products can do across the broader Zigbee ecosystem. A more unified approach enables products spanning traditional Zigbee, Smart Energy, and Green Power applications to coexist and exchange information across universal networks, where permitted by Trust Center policy. It also streamlines certification and extends new programs such as Rapid Recertification across device categories, while maintaining backward compatibility with existing deployments. For manufacturers, this means greater flexibility to develop products for increasingly diverse and interconnected smart home, building automation, professional installations, commercial, and energy management applications.

Use Cases:

Energy Information Influencing Home Device Behavior

In a Time Of Use example, a Smart Energy device can power off a smart plug that turns off an appliance during peak hours.

Grid Load Balance

Better notification of load events based on Demand Response (DR) logs sent directly from a Zigbee device to a Smart Energy device on the same network.

Distributed Energy Sources Usage

Load control in power outage scenarios with Distributed Energy Resources, for example, an Electric Vehicle battery used to provide energy.

Connected Energy Infrastructure

Zigbee is an established energy infrastructure with a link to multi-protocol systems for greater integration and control of energy management information.

Benefits:

1. **Unified Zigbee Ecosystem:** Zigbee and Smart Energy move towards a unified ecosystem.
2. **Interoperability:** Zigbee and Smart Energy device types coexist and communicate on the same network without bridge devices.
3. **Backward compatibility:** Zigbee 4.0 maintains backward compatibility to Zigbee 3.0 and Smart Energy devices.
4. **Smarter Energy Management:** intelligent, real-time exchange of information to optimize energy consumption and reduce energy waste for residential and commercial environments.
5. **Enhanced Security:** adaptive security, precision-built for Smart Energy and regulatory compliance.
6. **Streamlined Certification:** simplifying certification while minimizing re-certification costs with Fast Track and Rapid Recert programs.