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## **Multiparty Interoperability of Bidirectional Charging**

*Additional submitted attachment is included below.*



## Importance of Multiparty Interoperability for Bidirectional Charging

It's crucial for bidirectional charging (V2G) for electric vehicles to become multiparty interoperable, meaning that private and fleet users can freely change vehicles, chargers (AC or DC), and aggregators when selling flexibility to the grid, based on the Golden Guidelines and the objectives of IEA Task 53 (Multiparty Interoperability of Bidirectional Charging - INBID), because:

### 1. Avoid stranded assets

Without multiparty interoperability, each EV manufacturer or charging network could use its own “language” and protocols. This leads to *stranded, isolated solutions* that:

- **Only work within specific vendor ecosystems** (e.g., a specific charger brand with a specific vehicle brand).
- **Prevent users from swapping vehicles, chargers, or flexibility markets** (aggregators) without losing V2G capability.
- **Slow down global scalability**, because manufacturers must build many region-specific, proprietary variants instead of a single universal implementation.

**Multiparty interoperability facilitates this** by enabling all combinations of vehicles, chargers (AC & DC), and aggregators to communicate and operate seamlessly with the grid, accelerating adoption and utility.

### 2. Drive Cost Reduction

When interoperability standards are missing:

- Only a limited number of players can offer V2G services.
- New entrants face high barriers due to locked-in ecosystems.
- Costs stay high because every vendor reinvents similar solutions.

Multiparty interoperability enables:

- More competition among vehicles, chargers, and aggregator platforms
- Lower costs for hardware and services through economies of scale
- Greater innovation because vendors compete on quality, not compatibility

This benefits **both private users and fleets**, who can choose the most economical and efficient components without being constrained.

### 3. Scale-up V2G

Current V2G implementations are mostly **pilot projects** with bespoke setups. These cannot scale into real markets if they only work in isolated, vendor-specific pairings.

Multiparty interoperability means:

- Standards (like **ISO 15118-20**) are **implemented consistently** across the ecosystem.
- Vehicles, chargers, grids, and aggregators **speak the same protocols**.
- Real-world, cross-brand compatibility becomes the norm rather than the exception.

This is exactly the goal of Task 53's Golden Guidelines: to define how all parties should implement and test interoperability so that V2G can truly scale.



#### 4. Empower User Choice

Multiparty interoperability means **users and fleets aren't tied to a single supplier or platform**:

- A private EV owner can sell flexibility through one aggregator today and switch to another tomorrow.
- A fleet operator can replace vehicles or chargers without losing access to V2G revenue streams.
- Aggregators can onboard a wider range of EVs and chargers, expanding markets and services.

This **freedom of choice** is critical for adoption: users don't lock themselves into a single ecosystem just to participate in flexibility services.

#### 5. Support Grid Stability and Renewable Integration

Bidirectional charging offers grid services that help balance supply and demand, especially with high levels of renewables.

But to truly contribute to grid stability:

- **Thousands or millions of EVs must be able to operate together**, regardless of brand or region.
- DSOs and TSOs need predictable and standardized interactions with aggregators and vehicles.

This underpins the broader electricity transition and maximizes the value EVs can provide to the grid.

#### Summary: Why Multiparty Interoperability Matters

| <u>Benefit</u>                 | <u>What It Enables</u>   |
|--------------------------------|--|
| <b>No vendor lock-in</b>       | Users can freely change EVs, chargers, and aggregators           |
| <b>Lower costs &amp; scale</b> | More competition and economies of scale                          |
| <b>Real market deployment</b>  | Moves V2G beyond pilots to mainstream adoption                   |
| <b>User freedom</b>            | Choice of components and services without compatibility concerns |
| <b>Grid integration</b>        | Reliable, standardized flexibility for grid stability            |

Submitted by IEA EV-TCP Task 53

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