

## Project Design Phase

### Solution Architecture

Date	23 june 2025
Team ID	LTVIP2025TMID47899
Project Name	Plugging Into the Future – An Exploration of Electricity Consumption Patterns using Tableau.”
Maximum Marks	4 Marks

#### Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.

#### Example - Solution Architecture Diagram:



# Solution Architecture

## Data Sources (Input Layer)

- Smart meters / IoT devices
- Utility company databases
- Public datasets (e.g., weather, tariff rates, census)
- Manual uploads (CSV, Excel, APIs)



## Data Ingestion Layer

- ETL Tools (Tableau Prep / Alteryx / Python Scripts)
- Real-time data streaming (optional: Kafka, MQTT)



## Data Storage Layer

- Cloud databases (e.g. AWS RDS, Google BigQuery)
- Data warehouse for historical analytics
- Backup/R for logging systems



## Visualization & Reporting Layer

- Tableau Dashboards (real-time + historical views)
- Custom filters (by region, sector, time, etc.)
- Charts: Line graphs, heatmaps, treemaps, bar charts



## End Users / Consumers

- Utility companies
- Government & policy planners
- Commercial / industrial users

# Plugging into the future

Our study focuses on raising awareness about electric vehicles (EVs) and the improvement of the charging infrastructure implementation process. The impact of this study will help achieve the goal of the City of Ottawa to be green and resilient.



## Methods

**83**  
Surveys

40 EV owners  
44 Potential EV Owners

**12**  
Interviews

8 EV owners  
4 Potential EV Owners

**7**  
SMEs

5 EV Community Experts  
2 EV Infrastructure Experts

## Findings

"I would not rely on public charging unless it is managed by the government."

"When we were on -20°C I was like, why don't we have more chargers in the city?"

"There is no EV infrastructure here in Ottawa"

"It's painfully complicated to go through the installation process."



## Intervention

**1** Awareness & Education



**2** Preparing Support Processes



**3** One-Stop-Shop For All The EV Needs



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