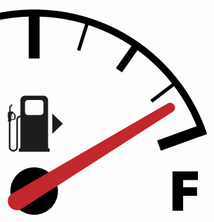

Fueling Tomorrow: Designing the Gas Station of the Future

A MODERN REFUELING AND CONVENIENCE EXPERIENCE FOR THE EV ERA

Date Presented:
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Presented by:
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02	Market Trends & Challenges
03	The Environmental Imperative
04	Target Users & Their Needs
05	Proposed Solutions
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Business Overview

WHERE ARE WE NOW?

Industry Snapshot

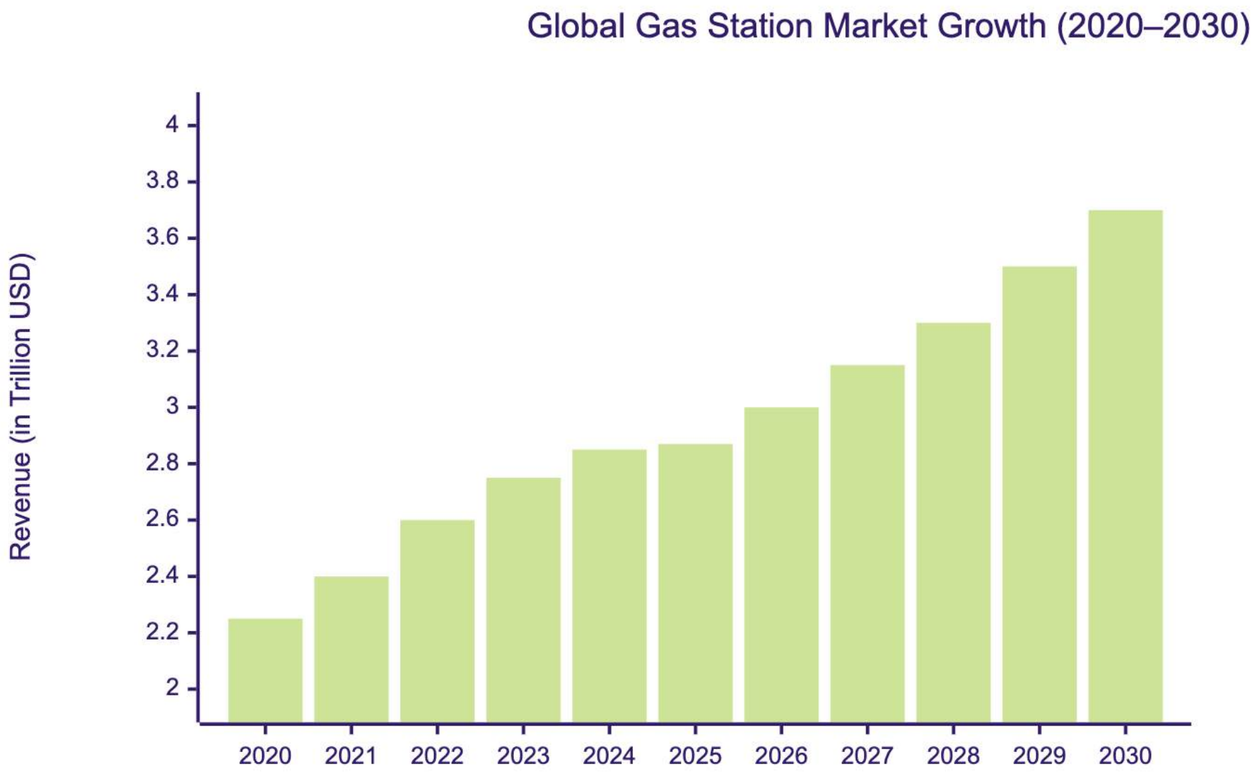
- Global fuel station market: $2.87T in 2025 → $3.5T by 2029 (CAGR 5.1%)
- U.S. market: $597.3B revenue in 2024, average $5.4M per station

Current Landscape

- Fuel remains dominant for now, but EV adoption is quickly cutting into growth
- 80% of U.S. stations have convenience stores; non-fuel sales growing 15% YoY
- Companies like Shell plan to close 1,000 stations by 2025 to expand EV charging across the US

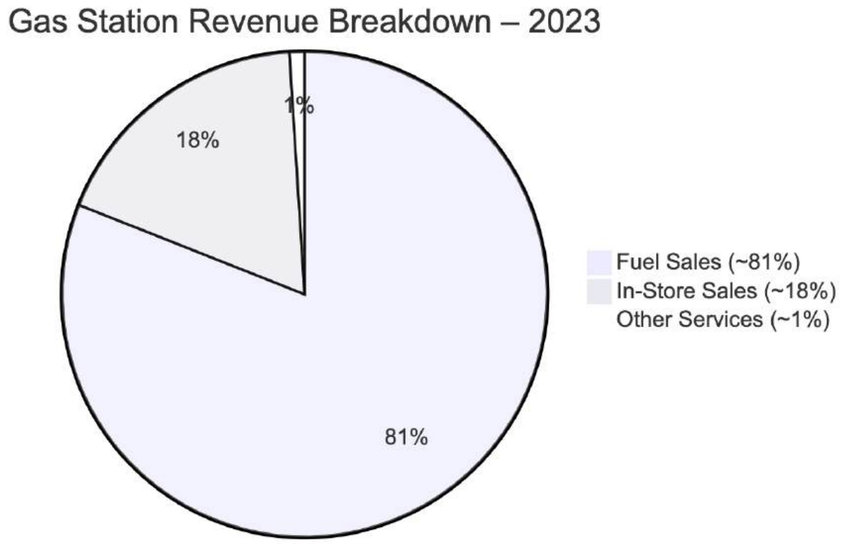
Business Overview

WHERE ARE WE NOW?



Gas Station Revenue Breakdown – 2023

- Gas Station Revenue Breakdown – 2023
- Fuel Sales: ~$4.77M, ~81% of total revenue
- In-Store Sales: ~$1.08M, ~18% of revenue
- Car Wash Services: Growing share, driven by bundled convenience
- Other Services: Includes lottery, air/vacuum, ATM fees



Business Overview

WHERE ARE WE NOW?

Regional Highlights

- **Europe**: Anticipates a 45% reduction in gas stations by 2050, aligning with the transition towards electric mobility and alternative fuels.
- **China**: Aims to add 30,000 new petrol stations by 2025, integrating traditional fueling with EV charging capabilities.
- **India**: Fuel station market projected to grow from $13.1 billion in 2024 to $21.2 billion by 2032, driven by increasing energy demand and EV infrastructure expansion.
- **Japan**: Japan is investing in hydrogen fuel infrastructure, with plans to establish 900 hydrogen refuelling stations nationwide by 2030, supporting its goal of carbon neutrality by 2050

Market Trends & Challenges

& why change is crucial

Global EV Adoption Accelerates

- EVs constitute 21% of global auto sales in 2025, marking a 29% year-over-year increase.
- China leads with a 27% battery electric vehicle (BEV) market share; the EU follows at 14%, while the U.S. lags at 8%.
- India experiences rapid growth in EV adoption, driven by government incentives and infrastructure expansion.

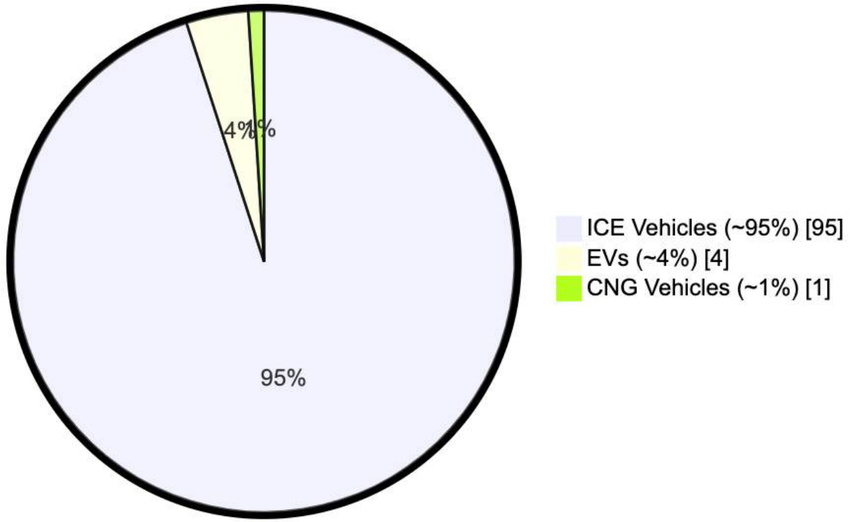
Infrastructure Challenges Persist

- 74% of manufacturers identify insufficient charging infrastructure as a primary obstacle to market growth.
- 58% of consumers express concerns about running out of charge during journeys, highlighting range anxiety.

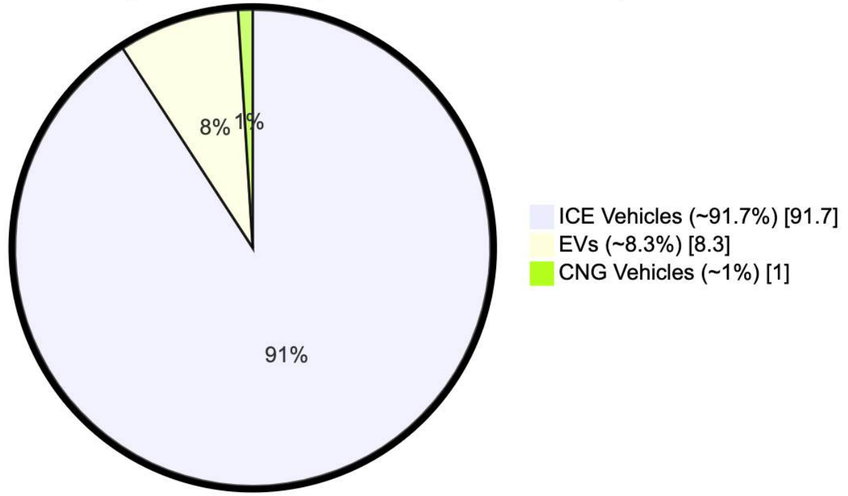
Evolving Consumer Expectations

- Modern consumers demand enhanced convenience, including quick service, quality food options, and digital payment solutions at fueling stations.
- Convenience stores at gas stations are thriving, with non-fuel sales, such as groceries and prepared foods, experiencing significant growth.

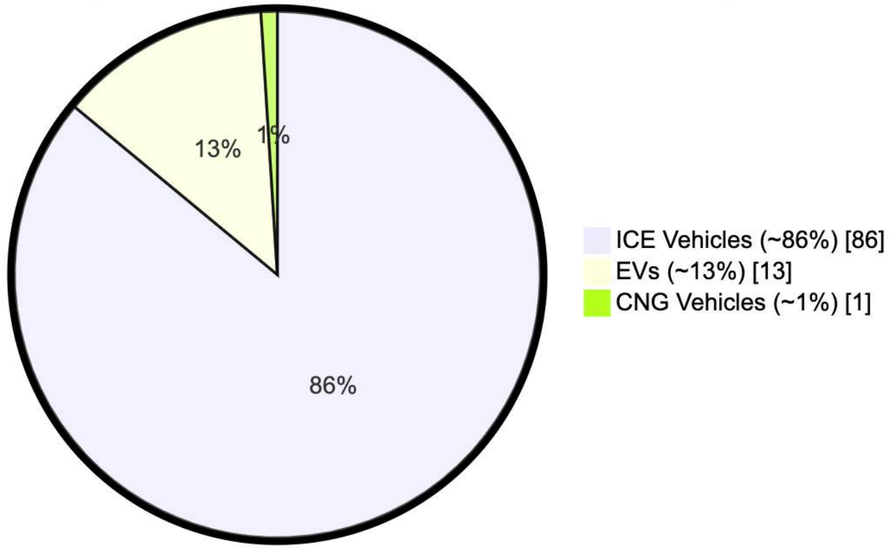
2020 Car Sales by Powertrain (Source: IEA)



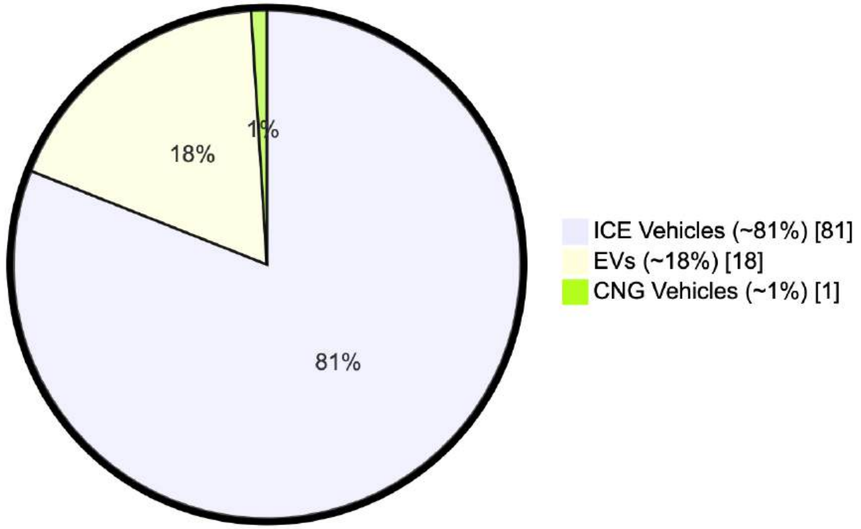
2021 Car Sales by Powertrain (Source: EV Volumes)



2022 Car Sales by Powertrain (Source: IEA Outlook 2023)



2023 Car Sales by Powertrain (Source: IEA Outlook 2024)



The Environmental Imperative

Sustainability is no longer optional – it's foundational

The Problem

- Transport = 23% of global CO_2 emissions (IEA, 2024)
- Road transport = 75% of transport emissions
- Gas stations rely on fossil fuels + grid electricity → high footprint

Policy Pressure

- 140+ countries committed to net-zero by 2050 (UNEP, 2023)
- EU: bans new ICE sales by 2035
- India: 30% EV adoption target by 2030
- U.S. Inflation Reduction Act allocates $370B+ to clean energy & EV infra

Risks of Inaction

- Fuel-only stations risk irrelevance post-2035
- Non-compliance = fines, subsidy loss, poor public image
- Increasing pressure from local emission zones and urban planning restrictions

Our Direction

- Solar-first model with battery backup
- EV charging + Gasoline at the start
- Plan to phase out gas pumps as ICE use declines
- Real-time carbon savings tracker for transparency
- Recyclable materials, water-efficient car wash, zero-waste design principles

Competitor *Analysis*

Competitor	Focus	Weakness / Gap
Tesla Supercharging	Speed + network scale	Exclusive to Tesla users for the most part
Shell Recharge	Expanding EV footprint	Lacks integrated experience and bad UX
Ionity (EU)	Pan-European fast charging	Sparse rural presence
BP Pulse	coverage in cities	App UX complaints
Current Gasoline stations	ICE	Lack digital exp, EV charging

Opportunity: None fully combine charging, comfort, retail, and digital convenience in a seamless way. And that's our angle.

Target Users

Who we're designing this for

01 Daily Commuter

- Lives in a suburban area, drives daily
- Owns or plans to buy an EV
- Time-constrained, tech-literate, values loyalty perks

02 Local Errand Runner

- Frequently visits gas stations for air, snacks, quick stops
- Doesn't always refuel – values convenience and speed
- Might walk, bike, or drive – expects public access

03 Frequent Traveler

- Long-distance road-tripper, stops en route
- less price-sensitive, more focused on convenience
- Would either drive an EV or an ICE vehicle

04 ICE vehichle user

- Refuses to switch from internal combustion vehicles
- Loves engines, dislikes EVs "on principle"
- Wants a fast, no-nonsense fuel-up with zero tech fuss

Their Needs

what they expect

User	Needs
01	• Fast, predictable EV charging • Clean restrooms and grab-and-go snacks • Seamless app experience with loyalty rewards
02	• Charger availability at long-distance stops • Comfortable rest areas, food options, Wi-Fi • One app to find/reserve/pay
03	• Free air pump, car blowers, fast self-checkout • Safe, clean, well-lit environment • Use services even without fueling
04	• Reliable gasoline pumps • Quick, no-hassle fuel-up experience • Clean facilities without pressure to “go electric”

Proposed Solutions 

Proposed Solution	User Value	Scalability	Differentiation
1. Solar-Powered Infrastructure	Clean energy for EV chargers, lighting, and operations; backed by battery or grid for cloudy days	Scalable across urban and rural locations; panels modular & low-maintenance	Helps transition to carbon neutrality and lowers long-term operating costs
2. Seamless App Experience	Find stations, reserve chargers, earn rewards, check amenities, get real-time wait updates	Scales digitally without location limits; works across all stations	Most apps are clunky or partial – this would offer everything in one place

Proposed Solutions

3. Self-Checkout Retail & Perks	Grab snacks, coffee, basic groceries with tap-and-go checkout; loyalty benefits for regular users	Modular kiosks and integrations with existing vendors (e.g. Amazon Just Walk Out tech)	Combines speed + convenience with smart automation in an under-optimized part of the current experience
4. Free Amenities & Safety	Free air pumps, tire check, windshield cleaning, lighting, basic tools, and car care (blowers/wipes)	Cost-efficient upgrades with strong public perception; minimal land impact	Reinforces trust, safety, and public-good image – beyond a commercial gas stop

Metrics for Success

Category	Metric	Why It Matters
User Engagement	App adoption rate, session duration, loyalty program usage	Indicates how sticky and useful the digital experience is
Operational Success	Average charge wait time, % uptime of chargers, station visit duration	Measures efficiency and smoothness of the physical experience

Metrics for Success

Sustainability	% energy from solar, CO_2 offset estimate, decrease in ICE pump usage	Shows progress toward carbon-neutral vision and environmental impact
Customer Satisfaction	Net Promoter Score (NPS), satisfaction surveys, repeated visits	Captures how people feel about the entire station experience
Revenue Diversity	% of revenue from non-fuel services (e.g. retail, self-checkout, digital)	Shows business resilience beyond traditional gasoline sales

Closing Summary

A future-ready gas station

– What We Set Out to Do

- Reimagine the gas station as a sustainable, accessible, and user-centered public space – more than just a fueling point.

- What We Learned

- The market is moving rapidly toward EVs and convenience
- Users expect speed, safety, and a seamless experience
- Current competitors fall short in integrating energy, retail, and UX

- What We Learned

- A solar-powered station experience with fast EV charging
- Self-checkout retail and clean, modern amenities
- Free public-use features like air pumps and car blowers
- An intuitive app for access, navigation, and rewards

Closing Summary

A future-ready gas station

Closing Thought

This isn’t just about adapting to change, it’s about creating an experience people want to return to. The future of fueling is clean, digital, and human-centered.

References

https://www.iea.org/energy-system/transport
https://climateactiontracker.org/global/cat-net-zero-target-evaluations
https://www.fleeteurope.com/en/financial-models/europe/features/eu-loosens-co2-targets-sticks-ice-ban-2035
https://www.climatescorecard.org/2025/03/indian-government-sets-target-to-achieve-30-electrification-of-the-countrys-vehicle-fleet-by-2030
https://www.mckinsey.com/industries/public-sector/our-insights/the-inflation-reduction-act-heres-whats-in-it
https://www.iea.org/reports/global-ev-outlook-2024/trends-in-electric-cars
https://www.spglobal.com/automotive-insights/en/blogs/2025/03/india-ev-market-trends-future
https://www.sciencedirect.com/science/article/pii/S2773153724000057
https://driivz.com/glossary/range-anxiety
https://wpinc.com/the-ultimate-gas-station-experience-insights-into-consumer-behavior

Thank you!

Dziękuję!