

# SEI / ESB Conference on Electric Vehicles 18<sup>th</sup> Feb 2009



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TO COME

John Campion, Executive Director, Sustainability, ESB



# ESB Strategic Framework



Investing €22 billion in ensuring a sustainable energy future  
Supporting Ireland's continuing economic development  
Delivering a value for money, efficient service to all our customers  
Reducing our Carbon Emissions by 30% by 2012; 50% by 2020 and becoming Net-Zero by 2035

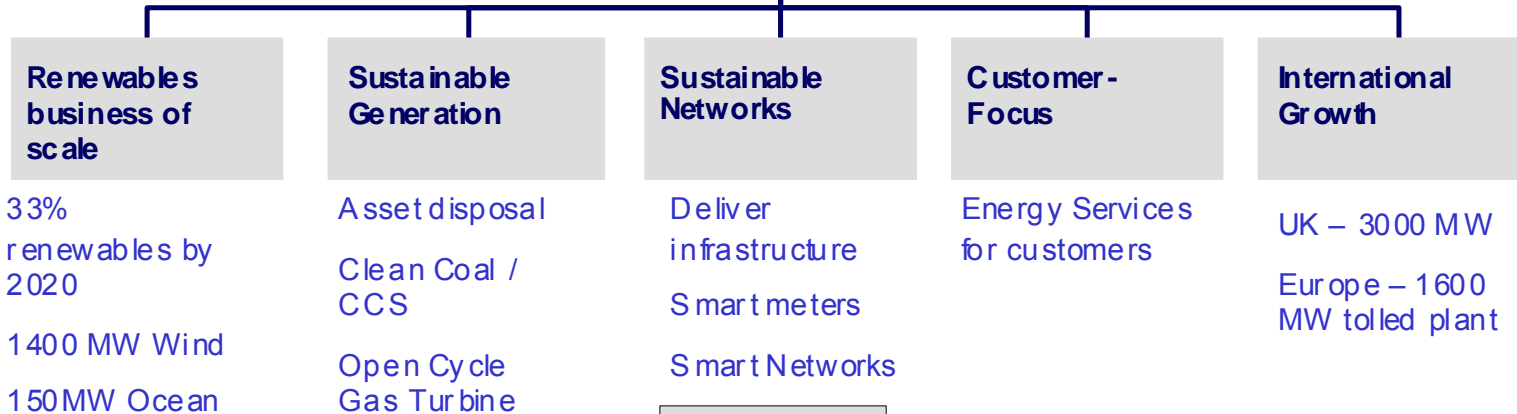


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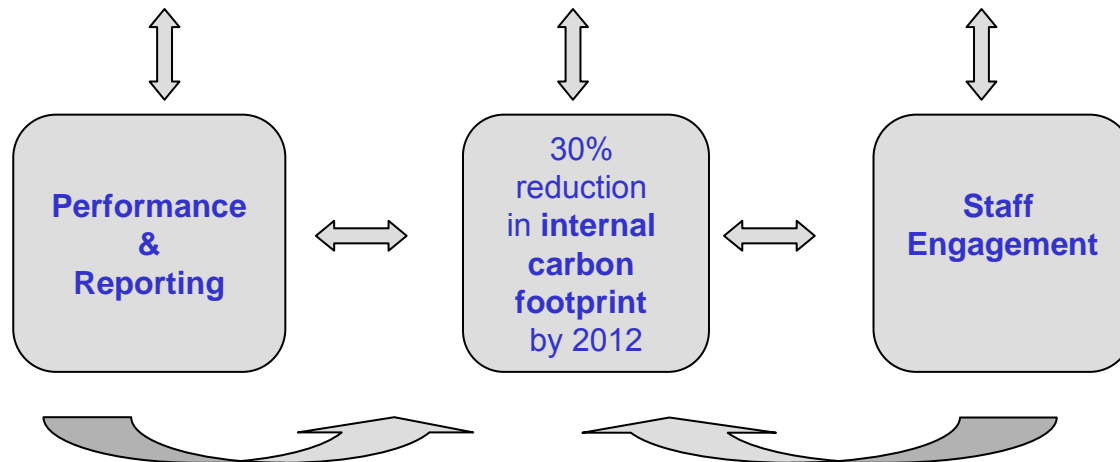


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**“Be a world leading commercially successful and environmentally responsible utility”**



**Sustainability Programme**  
**National Leadership in Environmental Sustainability**  
ESB will be exemplary in the management of its internal business in terms of environmental impact and energy efficiency



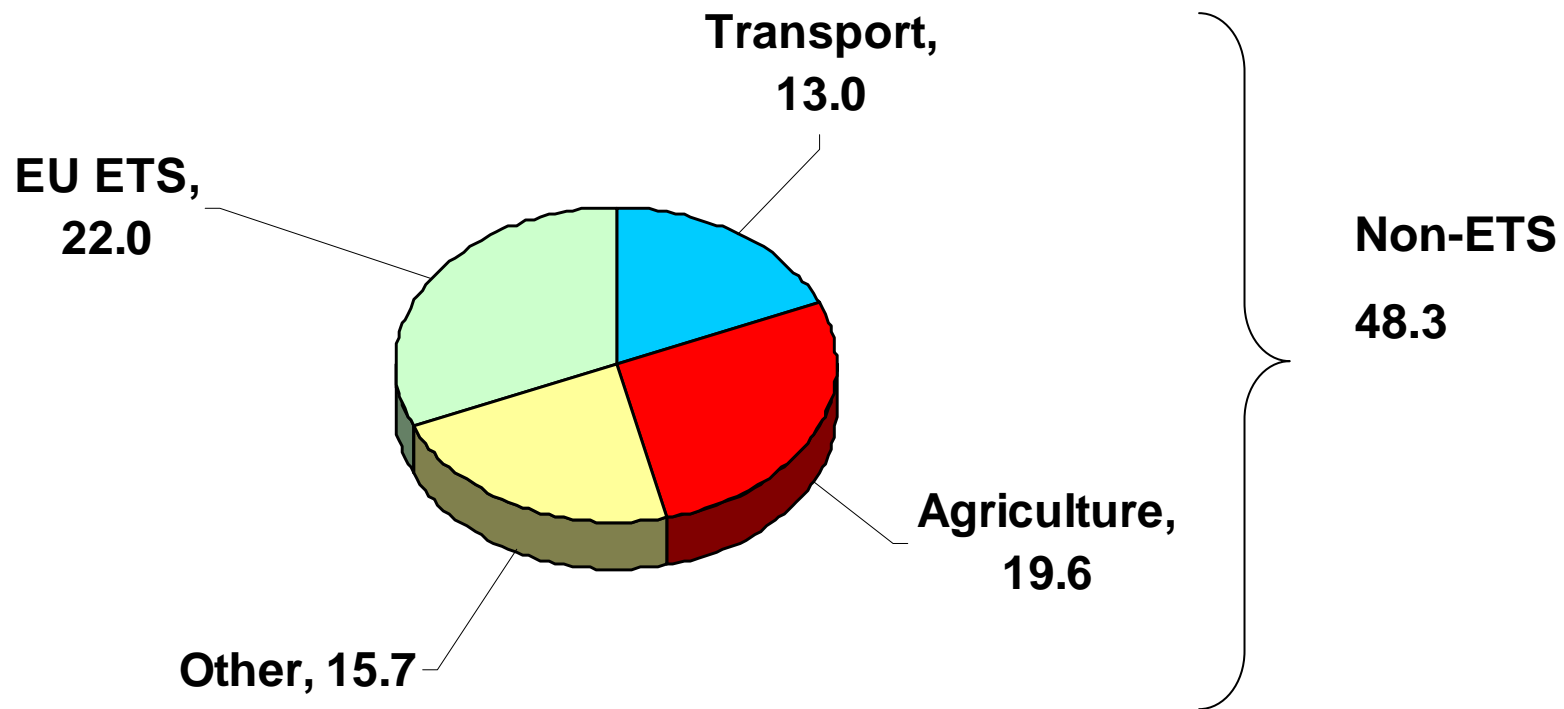
# The Challenge of Sustainable Transport



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In 2005 Ireland emitted 70.3 Mt of CO<sub>2</sub>e.

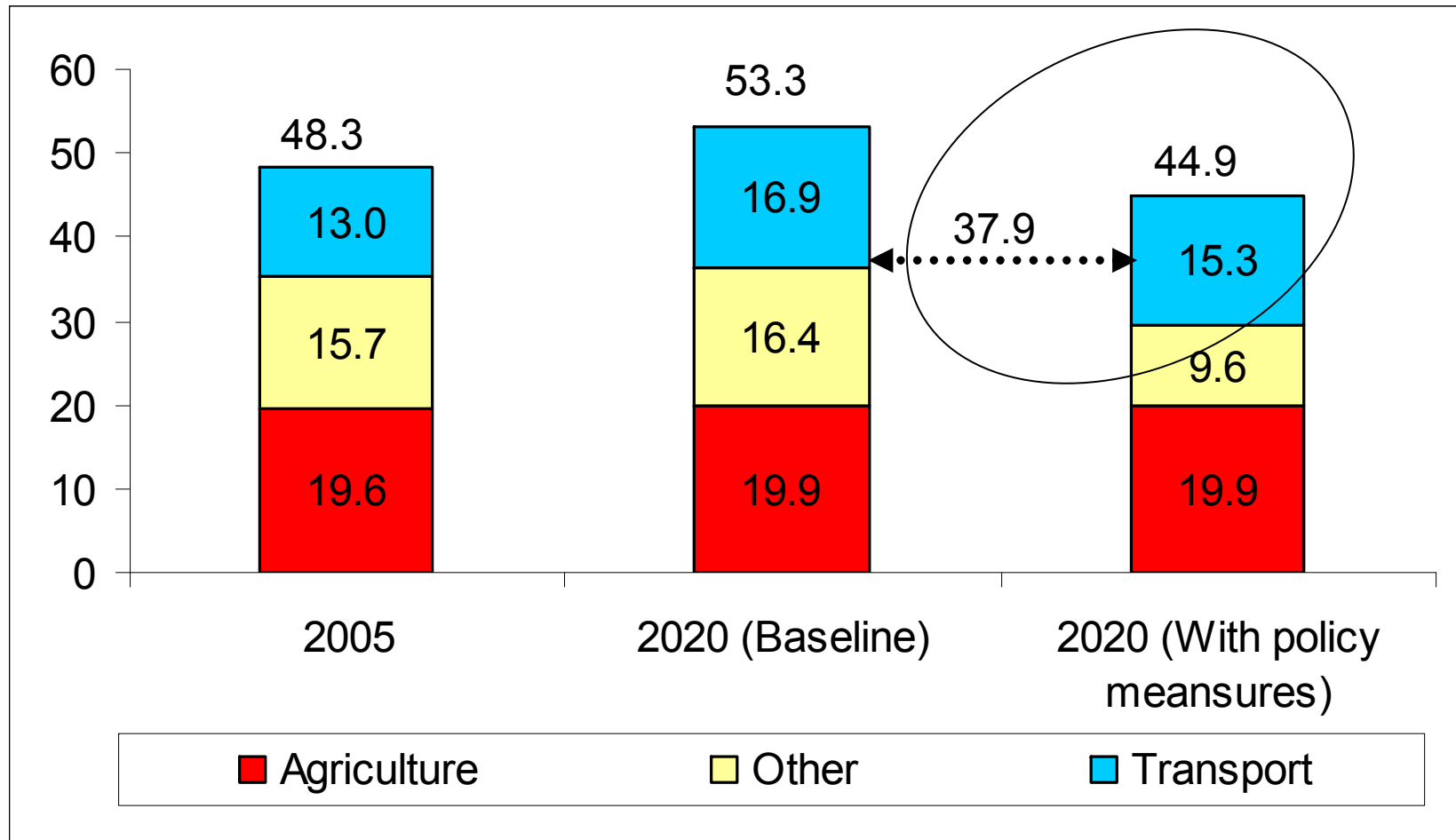


Source: EPA



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# Non EU-ETS – 2020 Target 37.9 MtCO<sub>2</sub>e (20% cut!)



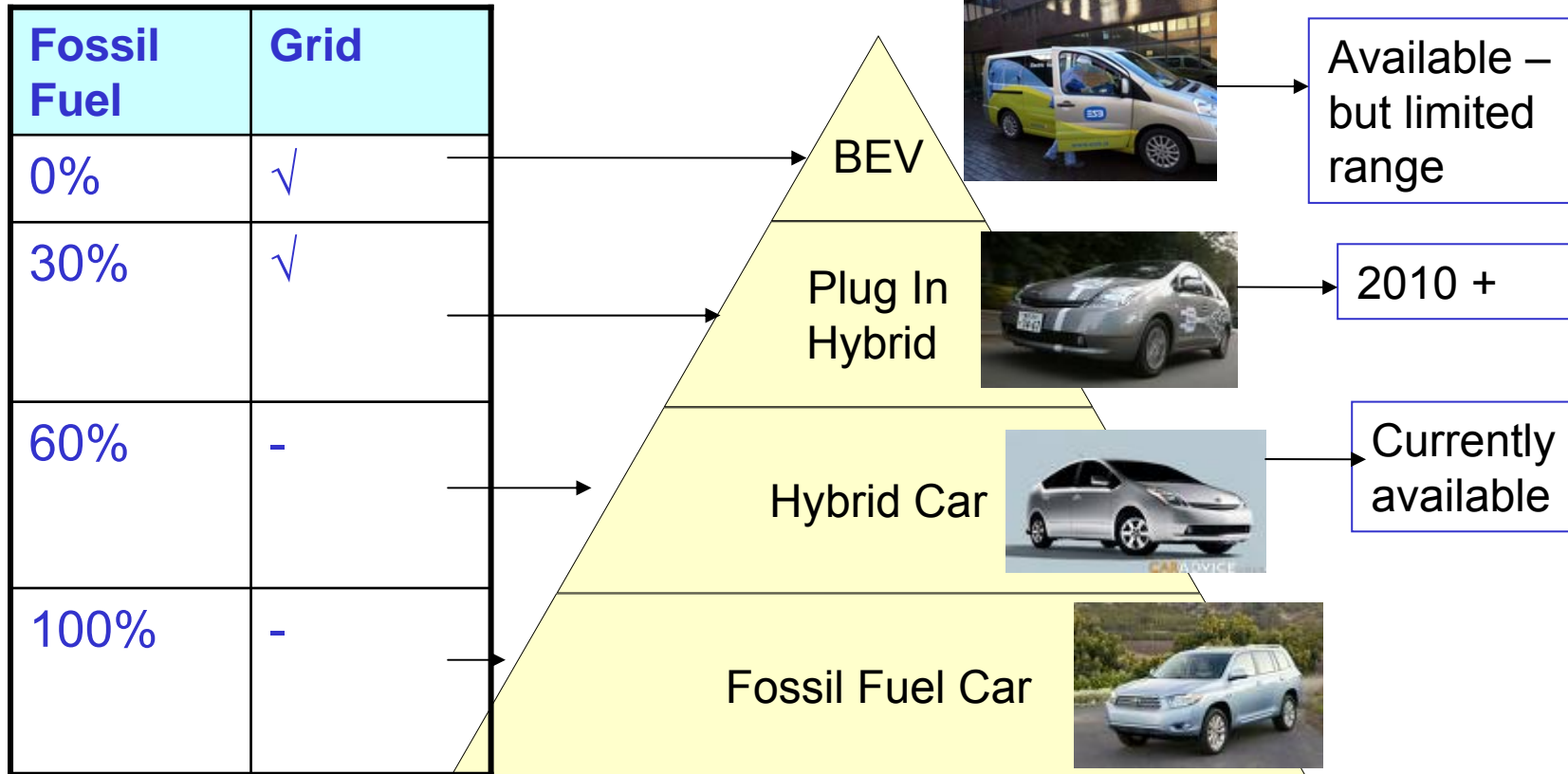
7 Mt Gap at 20% cut; if required cut goes to 30% then gap rises to 11Mt



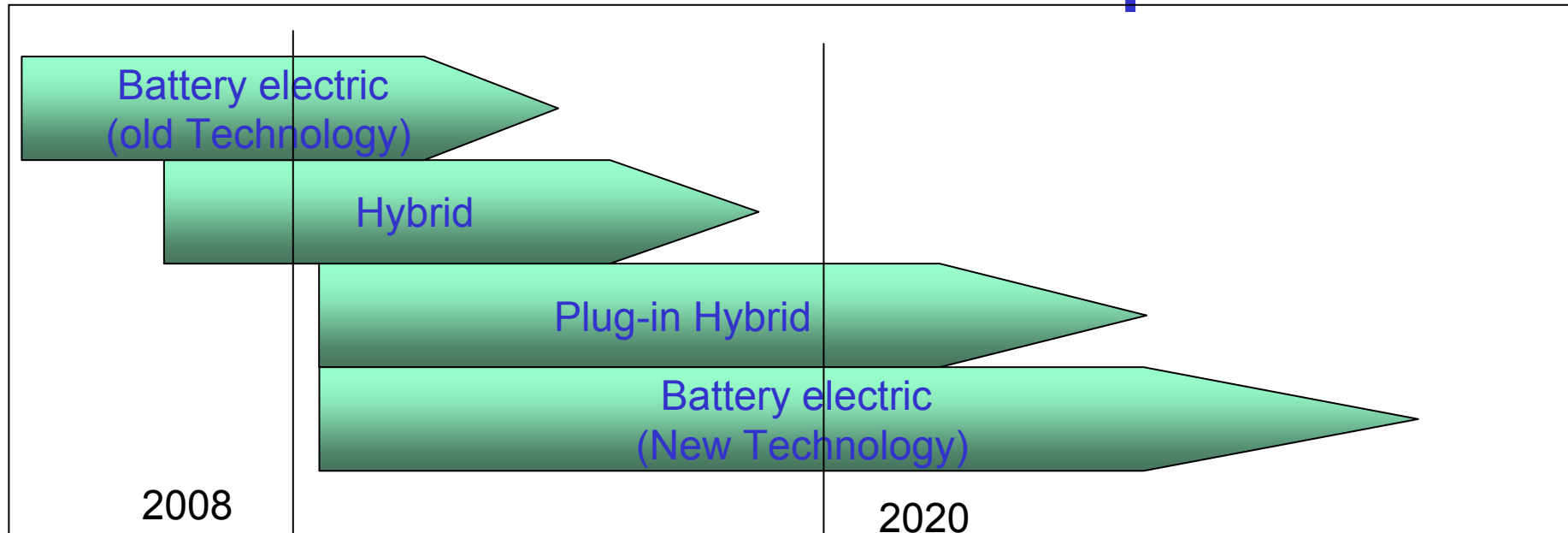
# Responding to the Transport Challenge Electric Vehicles



# Comparison of Electric Vehicles



# The Evolution of Electric Transport



- Electrification of transport seems inevitable
- (E.g. “20% hybridisation of U.S. market by 2015” - Deutsche Bank)
- Solutions developing for range extension (BEV) :
  - Battery exchange model
  - Fast Charging



# Battery Exchange / Fast Charging

## ➤ Battery Exchange

- Battery charged at home and /or at street / car park
- If long journey requires new charge, customer has battery replaced at Replacement Station
- I.T. solution allows driver to know status of battery, nearest charge points, battery replacement stations etc.

## ➤ Fast Charging

- Vehicle may have two charging connections
  - Standard single phase or 3 phase for overnight charging / opportunity charging while parked during day
  - 3 phase (or DC) for fast charging at specialised locations
- 30 mins to 1 hour quick charge currently available
- Target by manufacturers is 5 to 10 mins but technical issues remain



# Sustainable Transport ESB Initiatives



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# Sustainable Transport – ESB Initiatives

## ➤ Bio Fuels

- Converting 100 ESB fleet vehicles to Bio fuels (B20, B30, B50, B100)
- Joint study with University of Limerick to identify issues and develop technical solutions (launched Sept 08)
- Follow-on project with UL on 2<sup>nd</sup> generation bio-fuels
- Visible branding and promotion



# Sustainable Transport – ESB Initiatives

- Electric vehicles for ESB Fleet
  - First battery electric vans delivered; plug-in Hybrid vans on order
  - Integrating with ESB fleet
  - Visible branding and promotion as electric vehicles
- Electric cars for demonstration and promotion
  - Full-size battery electric cars (people carriers)
  - Offers to participate in European field trials of series-production battery electric cars
  - Plan to acquire plug-in hybrids

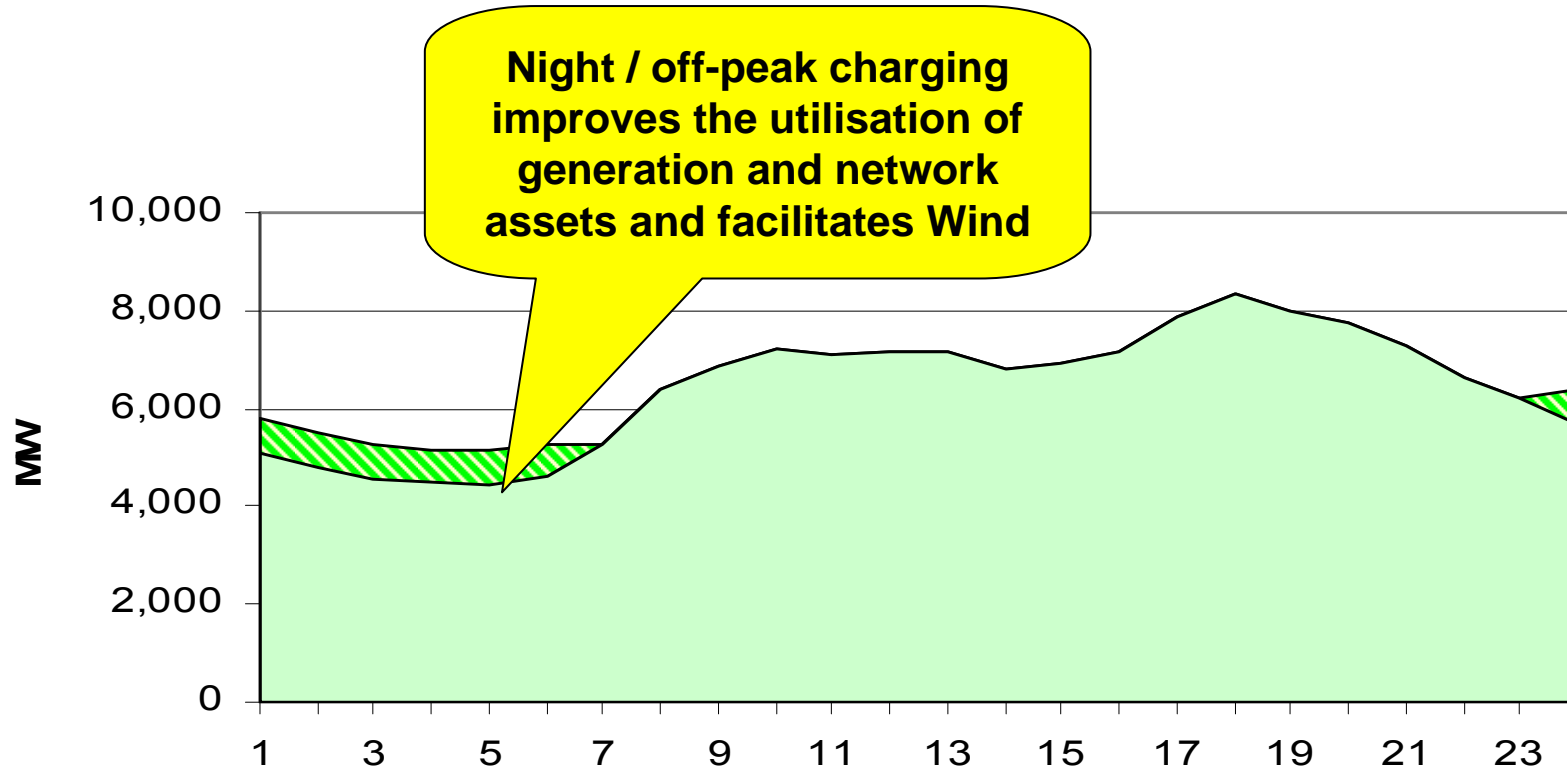


# ESB Project Work

- Ongoing visits to battery and car manufacturers
- Visits to other utilities / countries; e.g. EDF, EDP, Israel, Denmark, to understand their plans/models
- Studying load, emissions, and economic impacts of EVs on electricity generation
- Studying impact on electricity networks; including arrangements for charging infrastructure
- Working with inter-dept. / agency working group evaluating the incentives to support EV penetration – Gov. target 10% by 2020



# Load Impact of Electric Vehicles



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# Enterprise Opportunities for Ireland

- Cells, Batteries & Capacitors
- Efficient Electric Motors
- Power Electronics
- Energy Efficient Auxiliaries
- Hybrid & PHEV Integration
- Systems Integration (Vehicle)
- Systems Integration (Networks)
- Charging equipment
- Energy Economics



# Conclusions

- The penetration of EVs is critical to reducing Ireland's CO2 emissions and dependence on oil.
- ESB is very supportive of the Government's 10% EV target and is committed to ensuring that it will do whatever it can to help meet this target.
- Strong government support will be needed to incentivise EVs
- Delivering an appropriate charging network will be key to EV penetration. It is also of critical importance that there is open access for all car manufacturers and electricity suppliers
- EVs will be able to avail of cheap electricity at night and have the potential to provide the electricity system with electricity during periods of peak demand.
- Standardisation is a key issue for the industry.
- Significant opportunities for Irish Enterprise and 3<sup>rd</sup> level institutions in EV Supply Chain



# Thank You



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