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eCar Ireland Project

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Ireland as a location for ecars

- Key CO_2 emission challenge
- High levels of wind generation
- Limited range between urban centres
- Ideal climate for batteries
- High levels of Single family dwellings
- Ireland is a leader in the IT sector
- Single electricity network company
- Government commitment

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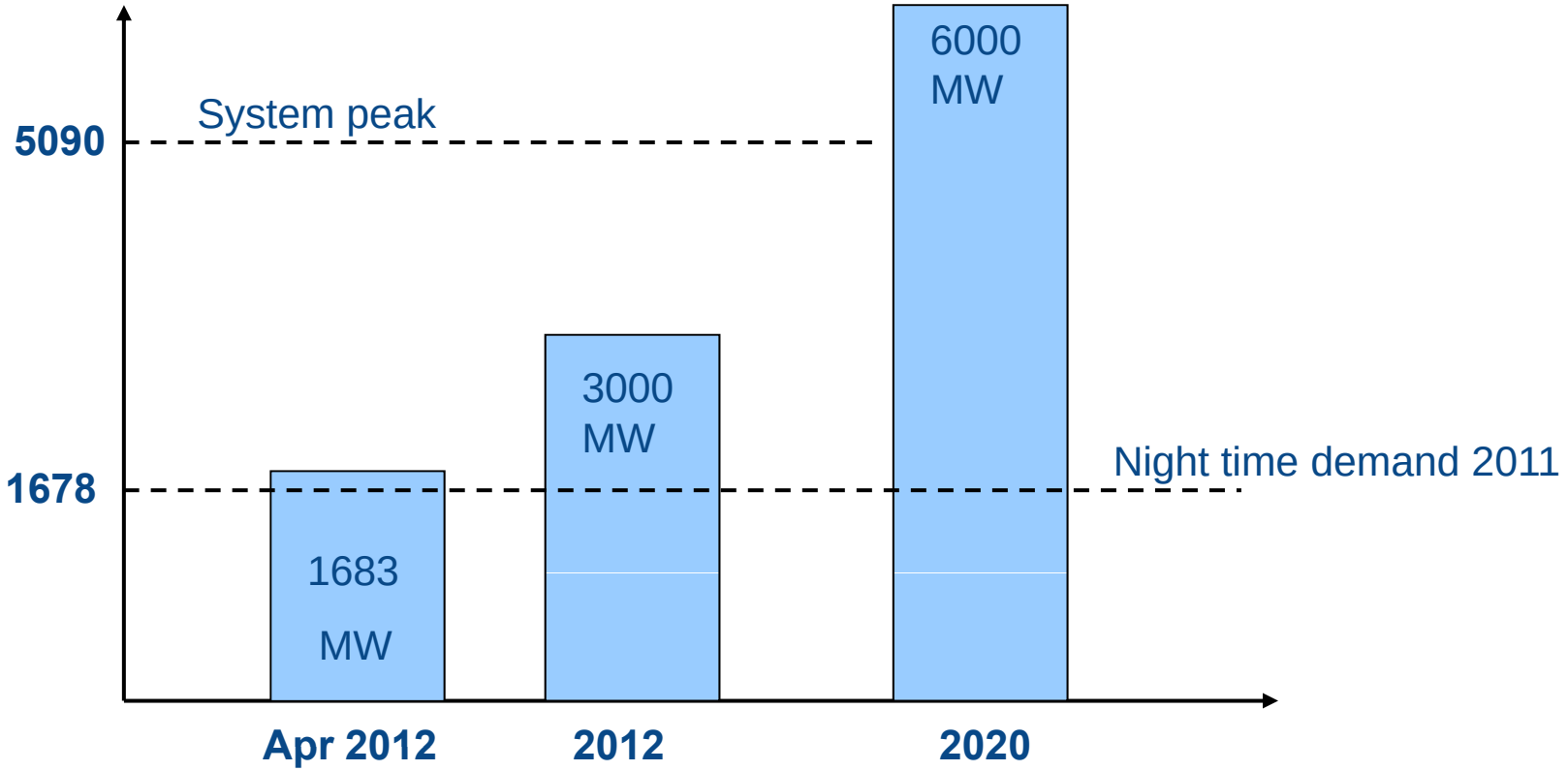
Irish Targets for 2020

- 10% of all Vehicles will be electric
  - Battery or PHEV
  - 250k vehicles

- EU 2009 Climate Energy Package
  - 20% CO_2 reduction on 1990

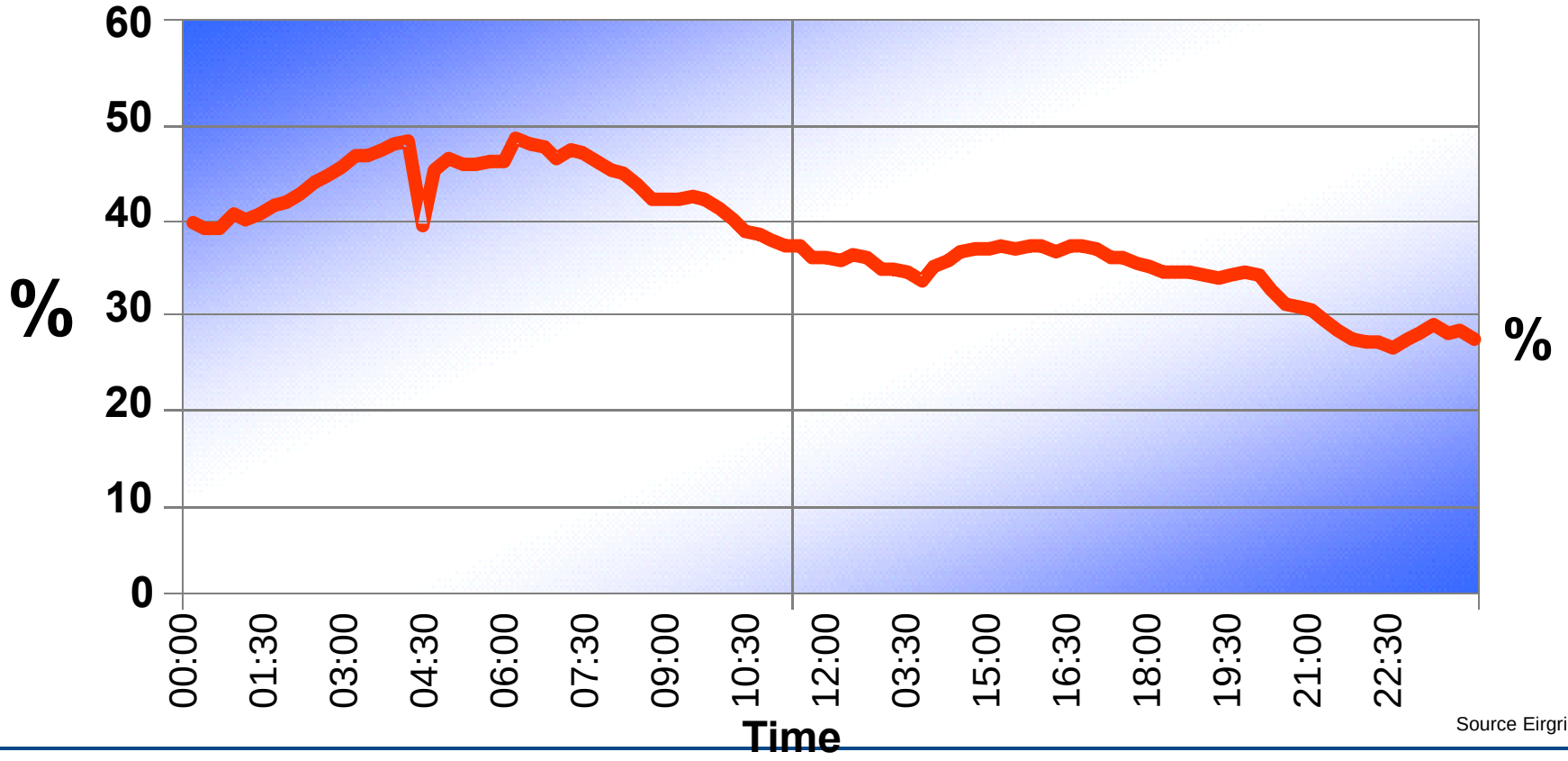
- EU Renewables Directives
  - 10% of all road transport energy from renewable sources

Ireland's Investment in Wind



50% Wind Connected to Distribution System

Wind Generation as % of System Demand Monday 5th April 2010



Source Eirgrid

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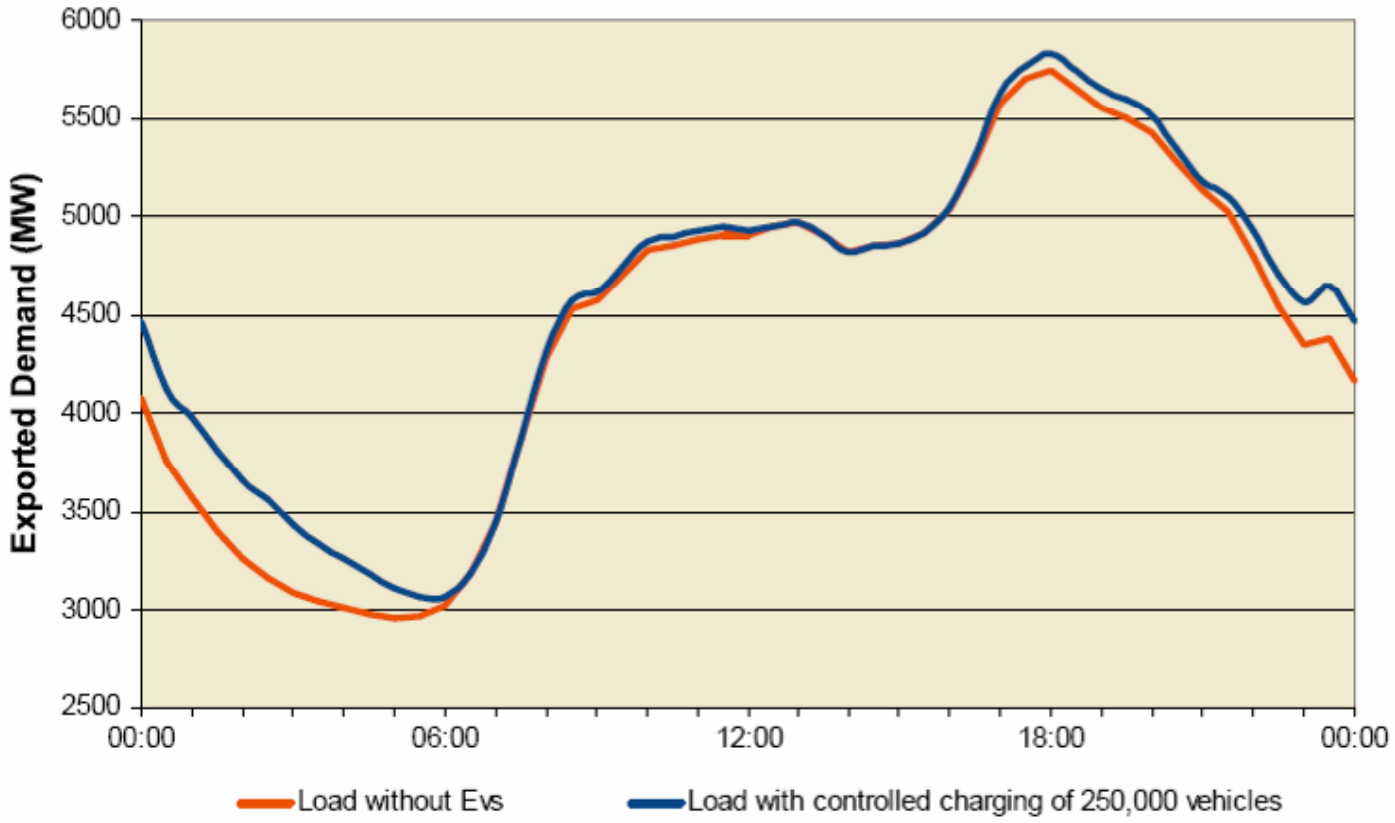
Electricity Demand Forecast



- Make generation more efficient by filling ‘night valley’
- No major increase in peak demand

eCar Ireland

- Early supply of electric cars
  - Renault - Nissan; Mitsubishi, PSA Peugeot Citroen, Toyota, Opel/ GM
- Incentives
- ESB to provide national charging infrastructure
- All electricity suppliers facilitated for competitive market for electricity to charge

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National Roll out of Charging Infrastructure

1500 On Street Charge Points

- Dublin & County 500
- Cork 135
- Limerick 45
- Galway 45
- Waterford 45

At least one charging point for every town with 1500+ population

30 Fast Chargers

- On all major inter urban route
- Every 60 km

2000 Domestic Chargers

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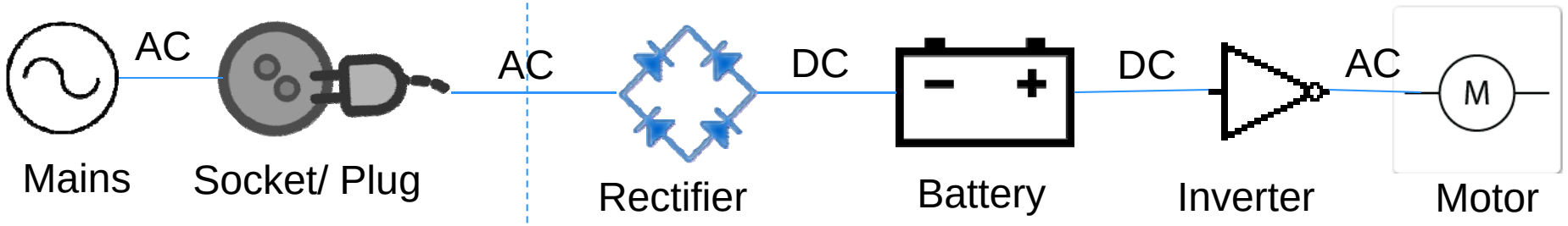
Charging

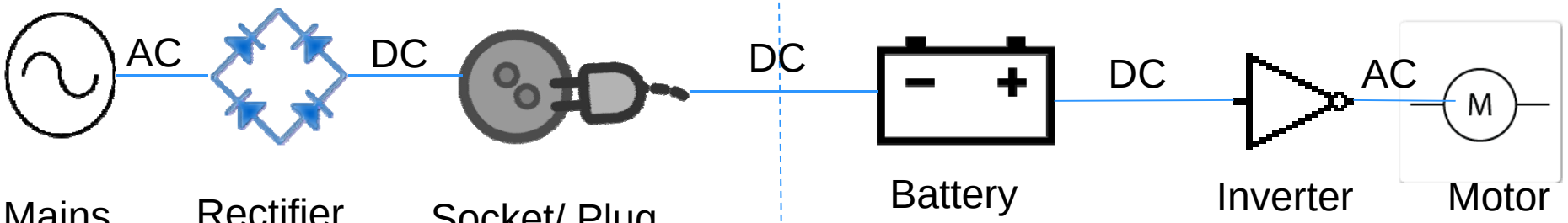
- DC - Direct Current
  - What flows in and out of a battery
- AC – Alternating Current
  - What comes out of a socket supplied from the “mains”
- Motors can be either DC or AC
  - But AC cheaper, more efficient & need less maintenance
- Too early to standardise on either AC or DC
- But standardisation within AC and DC possible
  - for plugs, sockets communication systems

eCar Charging

AC Charging



DC Charging



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Charging Infrastructure

HOME / WORK

6 – 8 hours
AC 1Φ 16A Mode 3
Type 2/ fixed cable

PUBLIC

1 - 6 hours*
AC 3Φ 32A Mode 3
Type 2

FAST

CHAdeMO

80% in 20 minutes
DC 50kW

AC 3Φ 63A Mode 3
fixed cable (Future)

**Depending on car*

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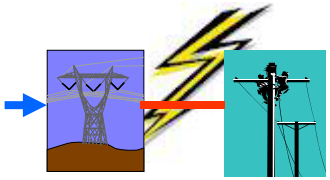
Context Aware Smart Charging
ESB, Intel, SAP, Renault Project



Electricity Faults

Traffic

Weather

Personal Diary Data

Real Time Electricity Prices

HEMS

OR

Cloud

Smart EVSE

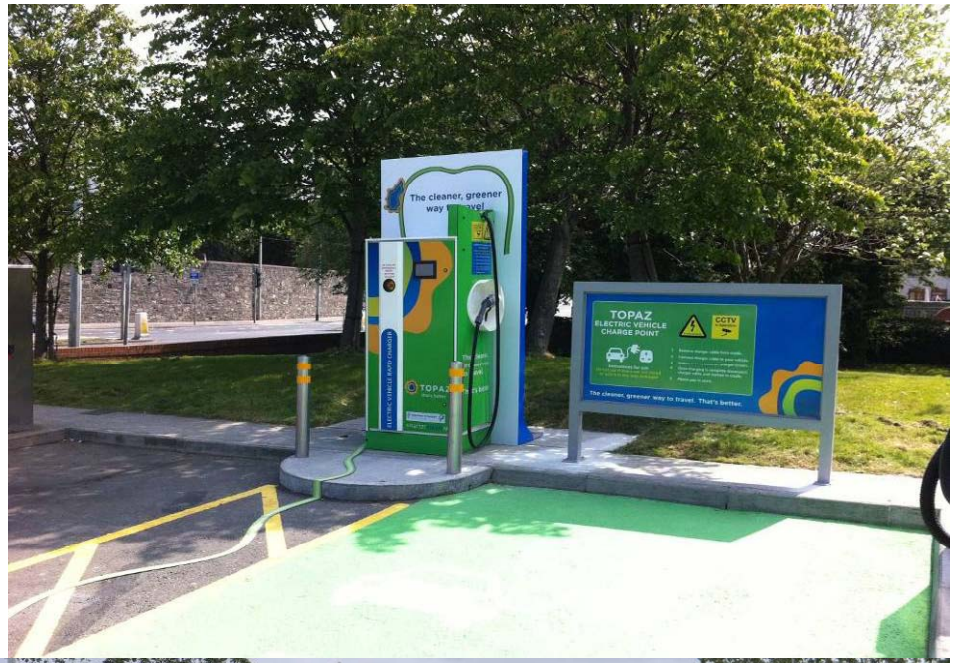
Car Canbus

Public Chargers Ireland

DC Fast Charging

- Japanese led Chademo Standard
  - Launched Internationally Mar 2010
  - European Steering Group Dec 2010
  - ESB member from start and on European Steering Group

CHAdeMO



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