



Centre for Renewable Energy
at
Dundalk IT

Small Scale Wind Overview Ireland

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Small Wind Conference
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Centre for Renewable Energy at Dundalk IT
CREDIT



Overview of Wind in Republic of Ireland

- Ireland has EU targets to meet 40% of its electricity generation from wind by 2020
- Irish wind industry is predominantly large scale (i.e. wind farms) at present
- 2281 MW installed large wind capacity in the Republic of Ireland
- 7135 MW conventional capacity
- ~ 20% Country total installed electrical generation capacity is wind



Overview of Wind in Republic of Ireland

- Country recorded load demand varies from minimum 1786 MW to maximum 5090 MW
- ~ 18% of annual electricity *energy (MWh)* demand is currently met by wind
- 1969 MW Republic of Ireland wind generation record reached at approximately 17.15 on 23rd February 2015
- Instantaneous wind generation is beginning exceeding over 50% of country demand more frequently (resulting in increased wind curtailment)



Small Scale Wind

- Small scale wind domestic market activity remains quiet in Ireland for various reasons (mostly economic)
- Was somewhat active between 2007 and 2011
- Export tariffs for small scale wind < 11kW ended in February 2014
- Some medium scale (50kW to 500kW) single wind turbine installations beginning to emerge (consisting of imported refurbished older machines)



Small scale installations

- Total of ~ 763 grid connected small scale machines installed (end of 2014)
- Total installed capacity (cumulative) ~4 MW
- Majority < 11kW
- Average installation rating 5.2kW



Grid connection process for small wind

- Straight forward “inform and fit” process for systems:
 - up to 6kW at single phase
 - up to 11kW three phase
- More complicated process above these levels that require site visit by utility to assess grid at proposed location



Current Manufacturing

- C&F Green Energy
- Kingspan Wind
- Other smaller operations (e.g. AirSynergy)



Micro-generation field trial project

- Micro generation trial initiated in 2009 by Sustainable Energy Authority of Ireland (SEAI)
- It included small wind, solar PV, micro-hydro and micro-CHP
- The project was consumer focused to gain knowledge and experience of how these system performed
- Carried out at consumer sites dispersed across the country
- Monitoring occurred between Jan 2011 to June 2012
- Data from 16 small wind sites now available



Overview of LIDAR

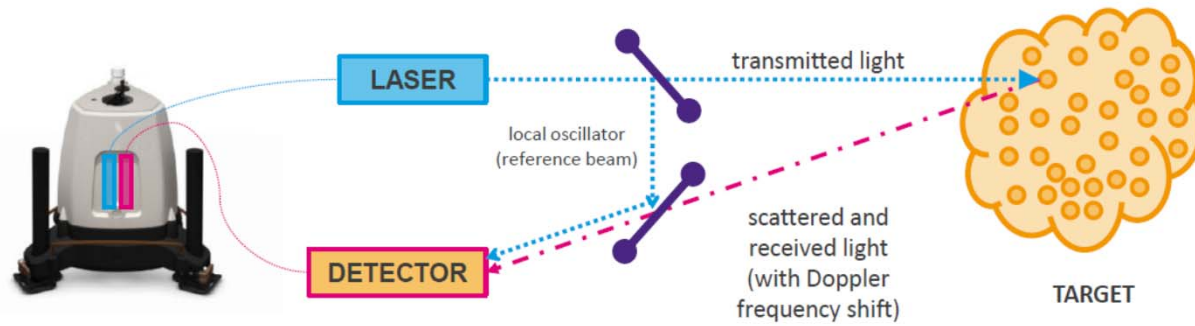
LIDAR – Light detection and ranging

Two main types- continuous wave and pulsed

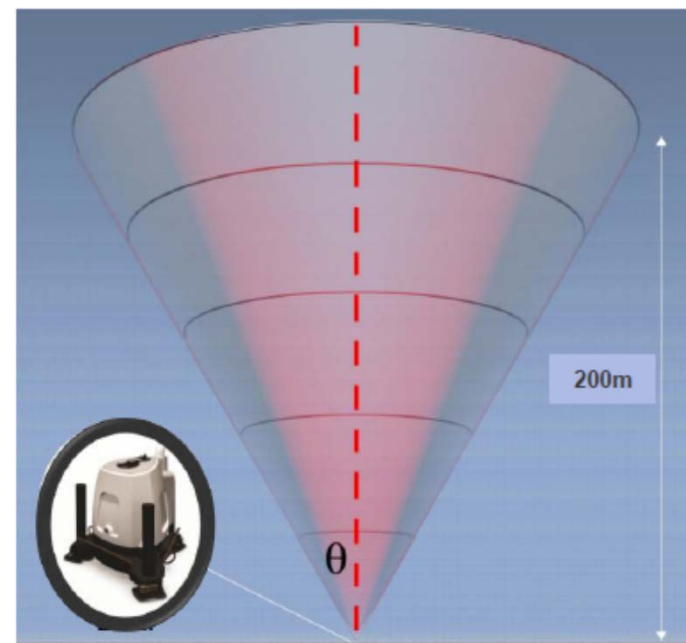
We took some measurements with a lidar in a suburban area over 1 month in Dec-Jan 2014/15

We used a continuous wave ZephIR lidar

Overview of LIDAR



Source: ZephIR Lidar



Overview of LIDAR



Suburban area



Suburban area

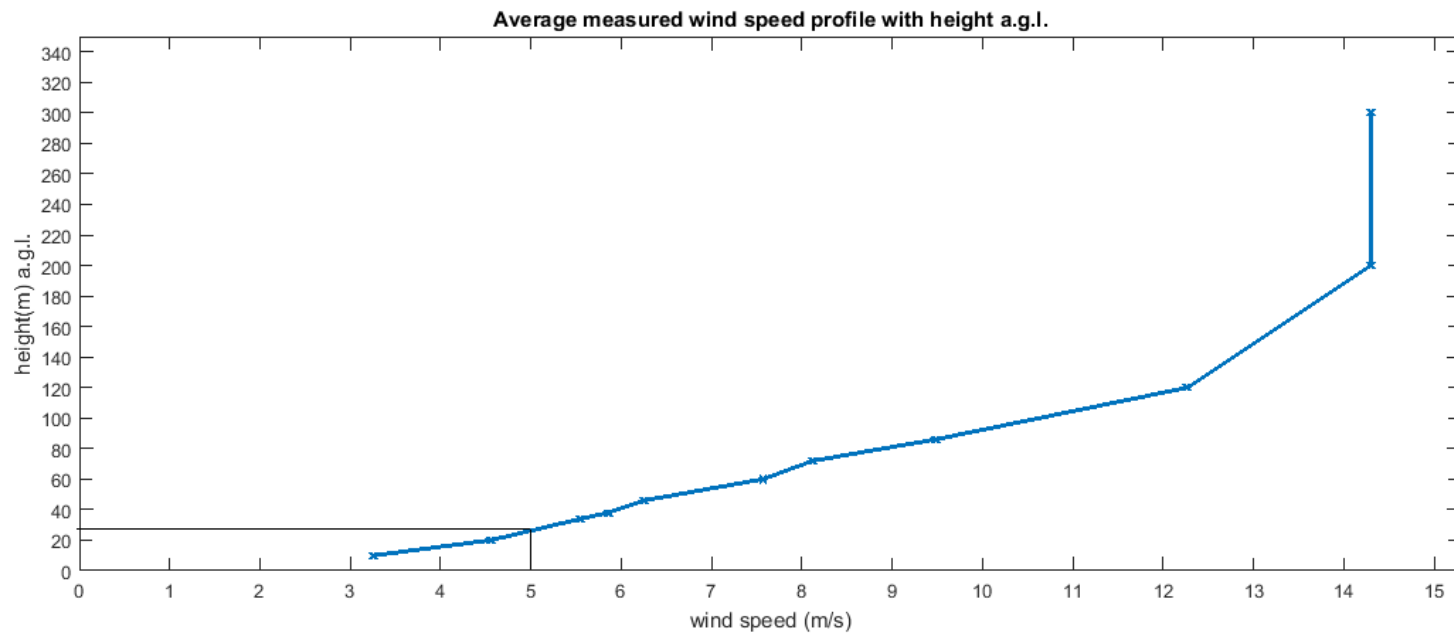


Suburban area



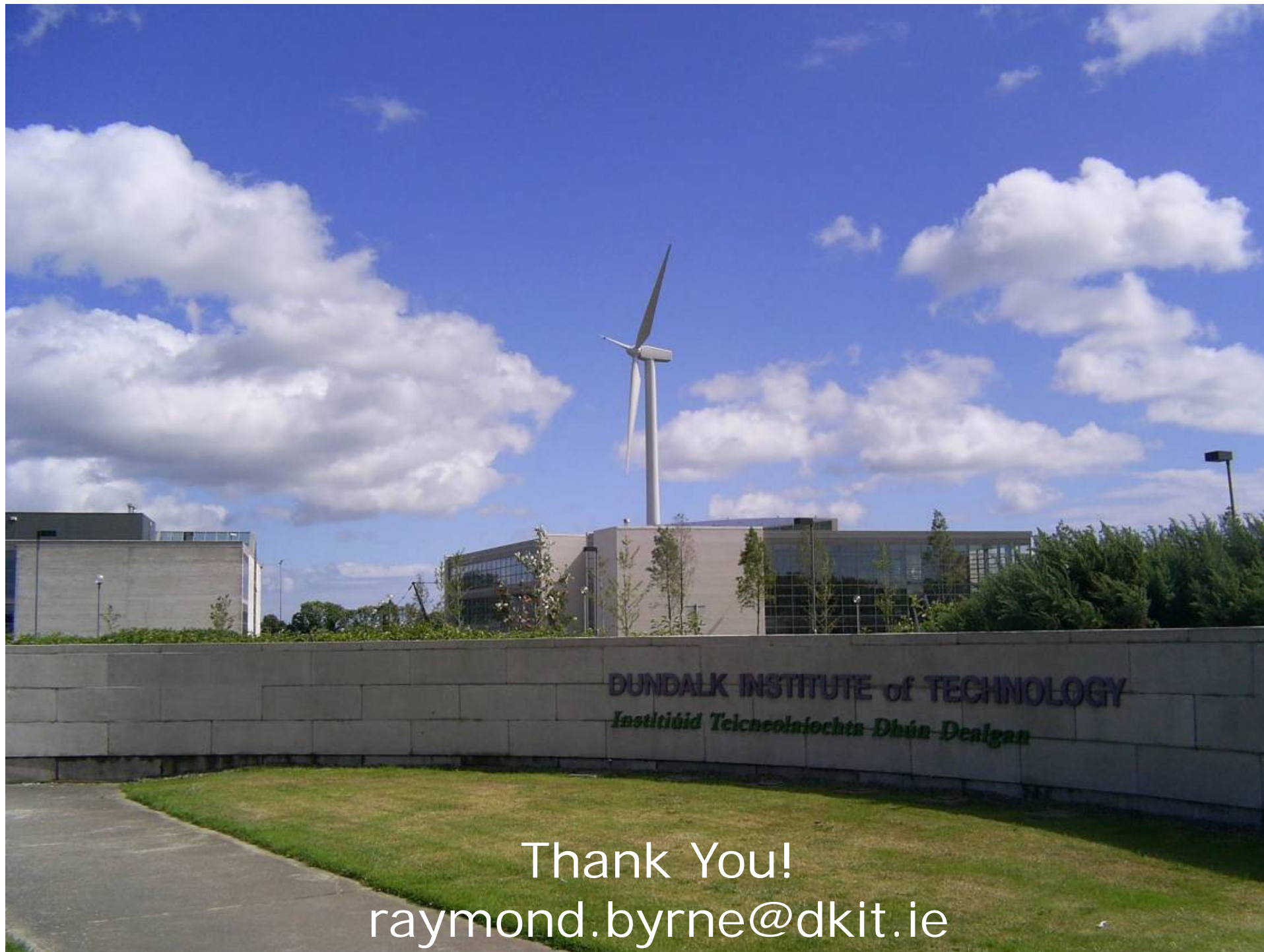


Preliminary wind speed profile with height (in a windy month!)



Measurement height settings:

10m, 20m, 34m, 38m, 46m, 60m, 72m, 86m, 120m, 200m, 300m



Thank You!
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