

Solar Energy Introduction

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Why Solar Energy?

- Tonight's discussion focuses on the “nuts and bolts” and financial benefits of solar
- Even more important is the benefit to the environment!
 - No greenhouse gas emissions
 - Solar is a renewable energy source
 - Wind, hydro, geothermal, biofuel
- Energy efficiency and reduced energy use
- Make a contribution to reducing the impact of climate change and supporting a sustainable energy future

Forms of Solar Energy

- Solar hot water
- Passive solar heating
- Solar CSP (Concentrated Solar Power)
- Solar PV (Photovoltaic) electric generation
 - Converts solar radiation to electricity using panels of semiconductors

Solar PV

- Residential



- Commercial

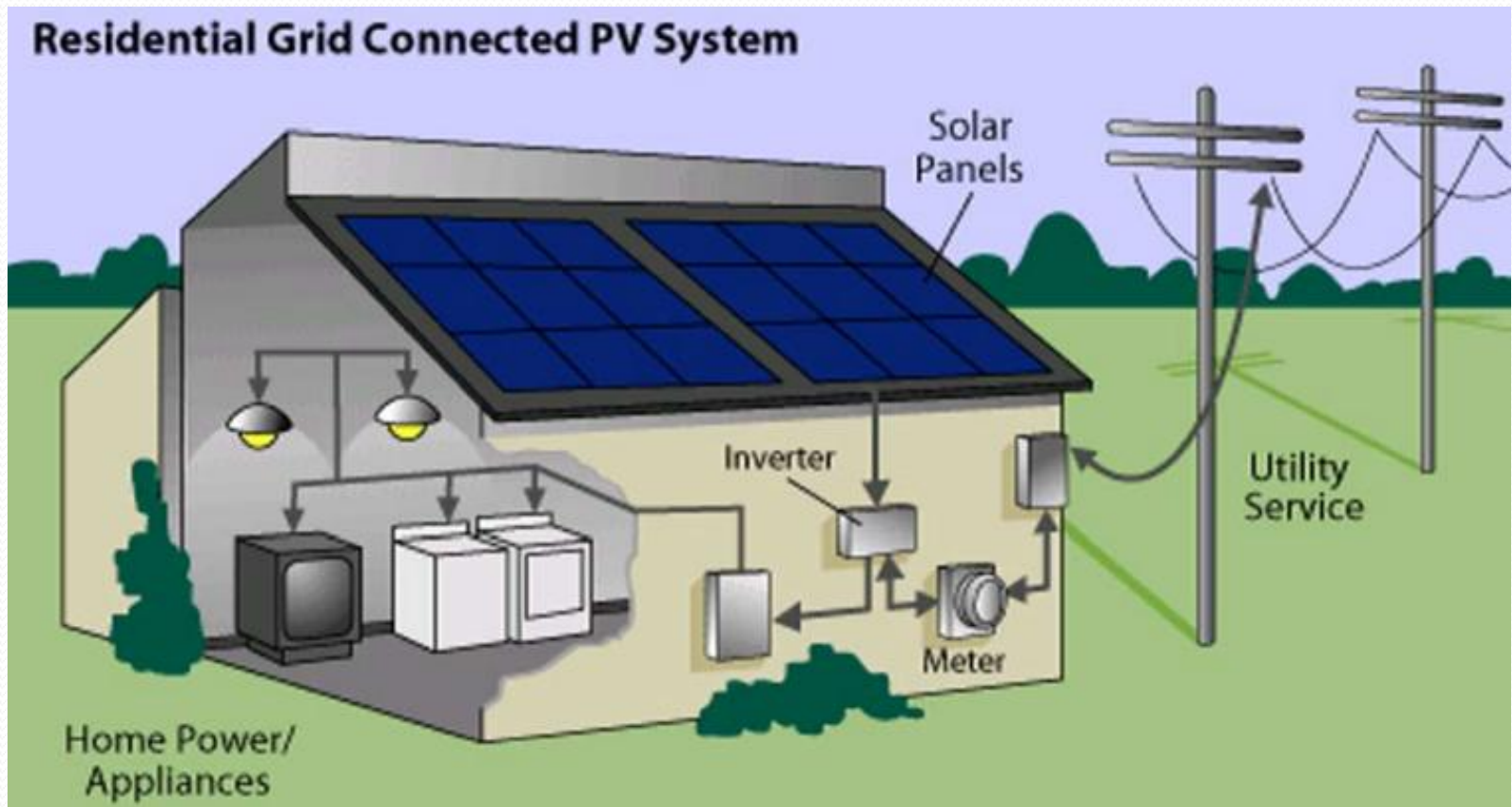


Residential Solar PV

- Off-grid versus on-grid
- Off-grid generally used in remote sites
- On-grid system generally has no storage
- Generated electricity used as it is produced
 - Only during daylight
 - If more is generated than needed for home, excess is fed back to the grid

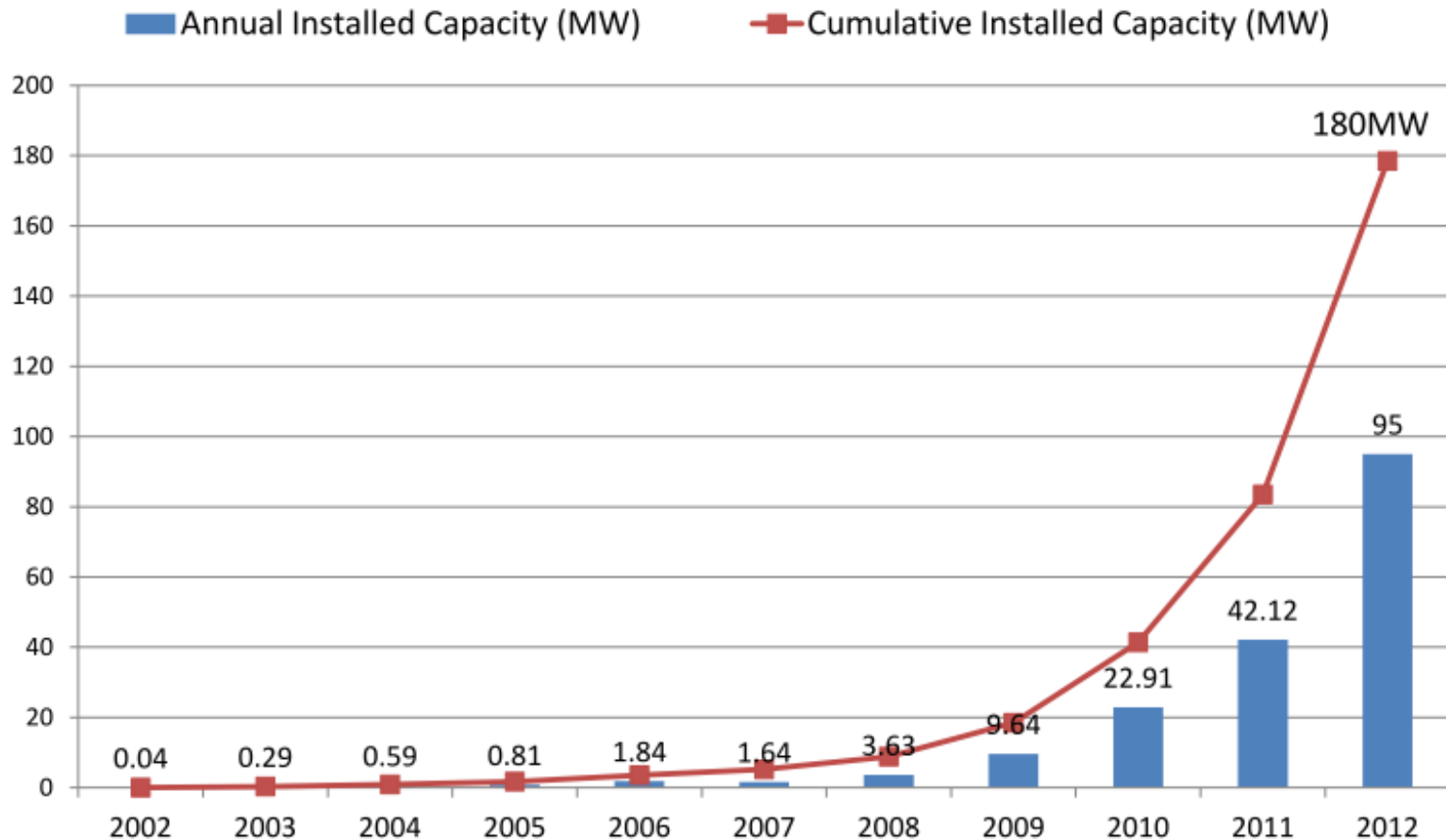
Residential Solar PV

Components of On-grid Residential Solar PV System



Solar in Massachusetts

Installed capacity has been doubling every year



Growth of Solar

- Cost of solar has been decreasing rapidly
 - Solar panels now under \$1 per watt
- Financial incentives
 - Federal – tax credits
 - State – Green Communities Act
 - Local – Hudson Light & Power
 - State and local incentives are different for different communities
- Increased awareness of need for clean energy