



هيئة تنظيم الكهرباء - عمان
AUTHORITY FOR ELECTRICITY REGULATION, OMAN

Promoting Solar Rooftop in Oman policies , regulations & outlook

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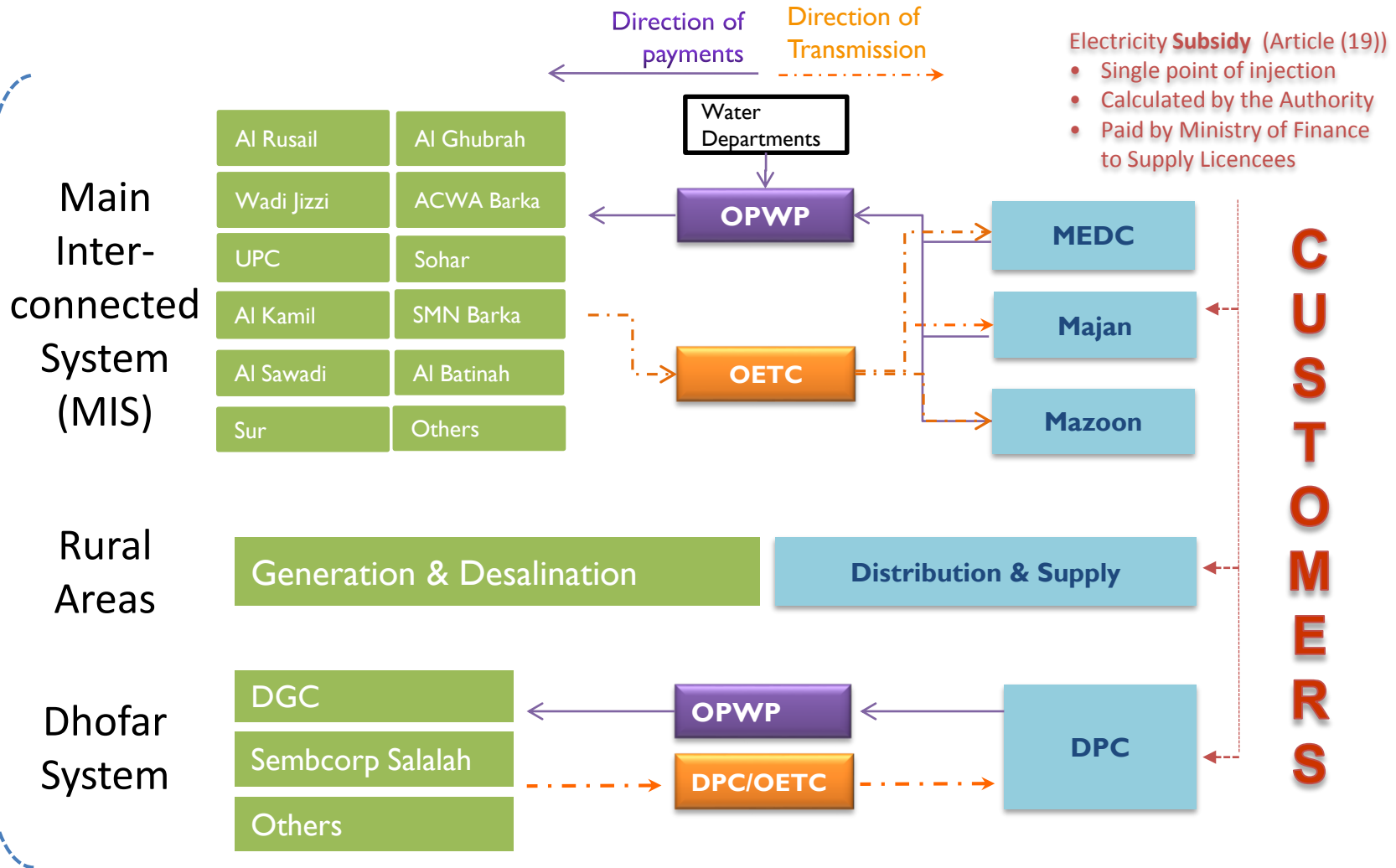
Project Manager- Renewable Energy

Muscat, 13th December 2017

Electricity Sector Market Framework



Authority for Electricity Regulation

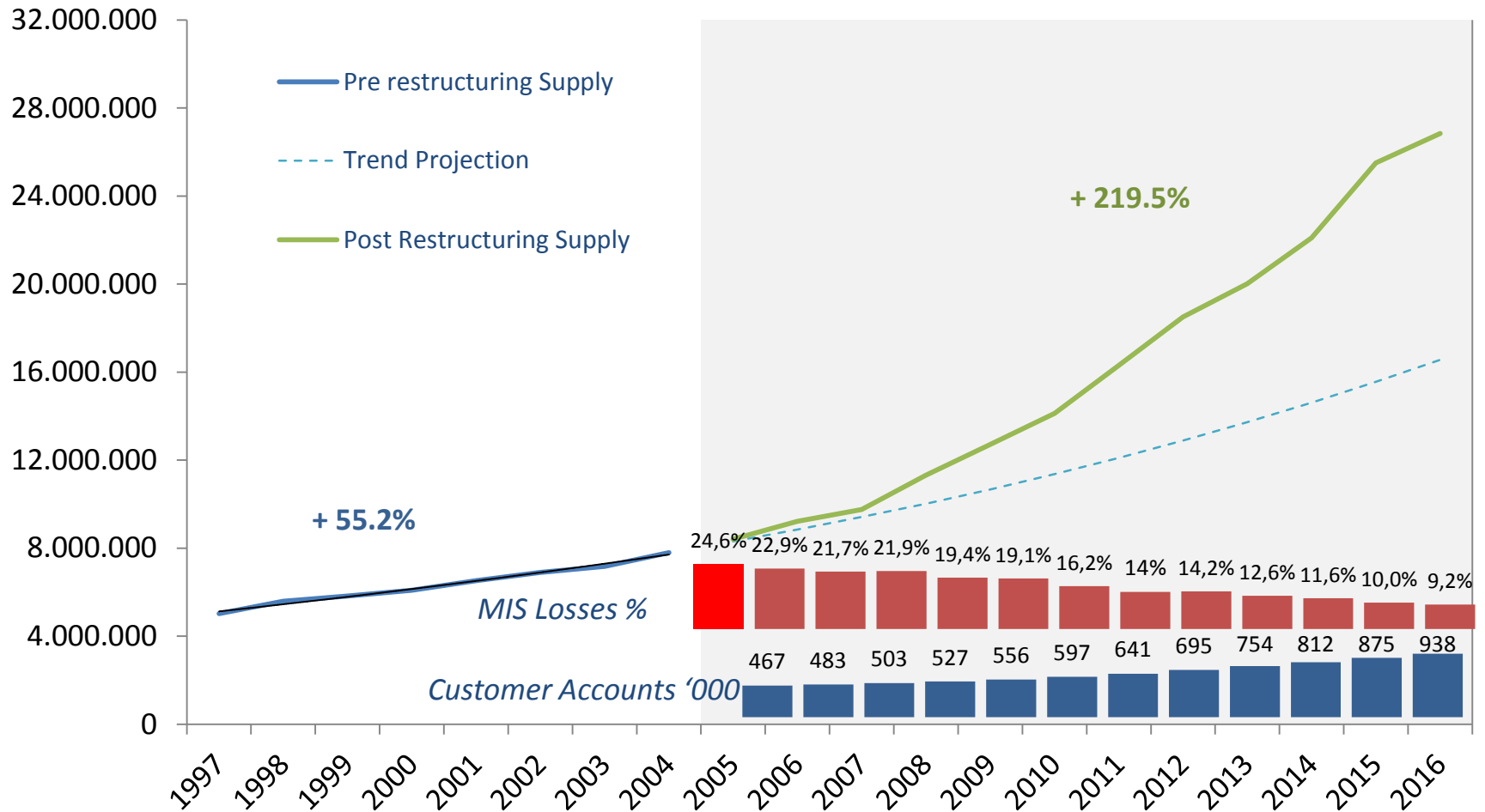


All intra sector transactions are: (i) regulated & (ii) fully cost reflective

Snapshot of MIS KPIs: Demand Growth



MWh Supply





Renewable Energy - Rooftop Solar



- **Solar Rooftops: “Sahim” Initiative**

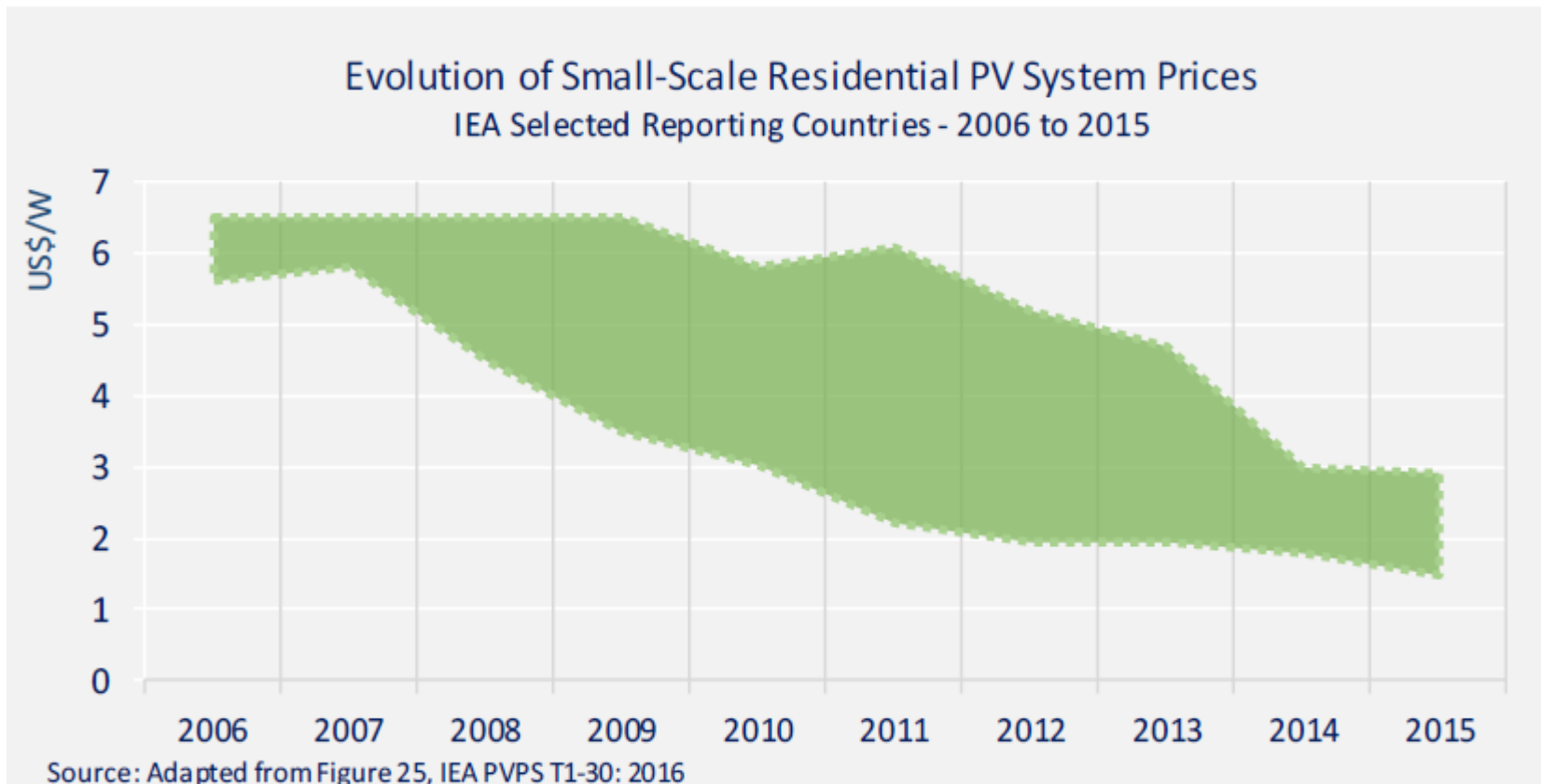
The Authority recently developed a new regulatory framework to:

- Allow Distribution companies to act as agents for OPWP, the current single buyer of electricity, to buy rooftop PV-generated electricity from consumers
- Establish minimum technical standards for rooftop PV
- Establish an Incentive mechanism to compensate for electricity generated by rooftop PV panels



Residential PV System Costs

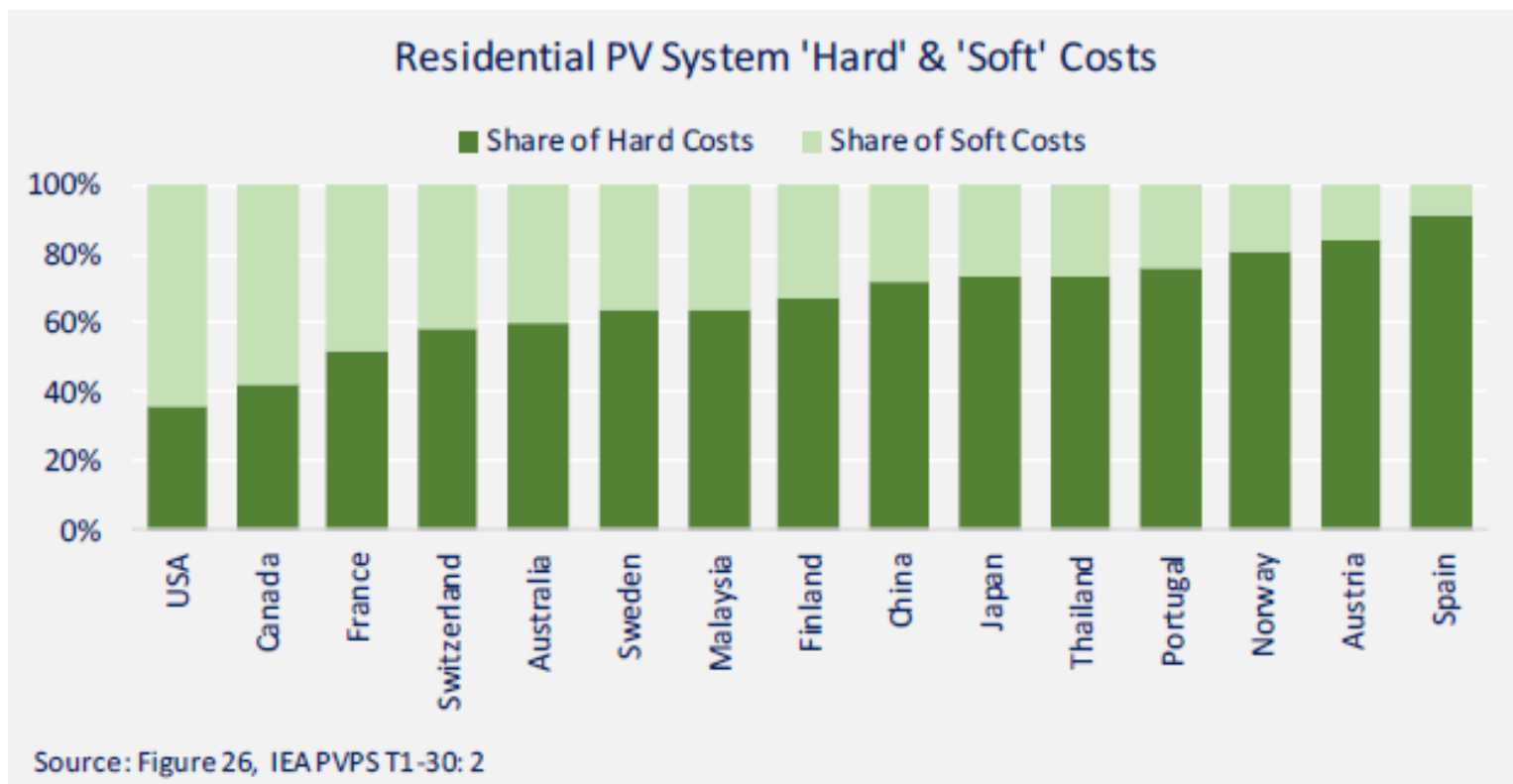
From a high-low range of 6.5 to 5.6 US\$/W in 2006, costs fell to 2.6 to 1.5 US\$/W in 2015, a 65% reduction in average costs.





Residential PV System Costs

- 'Hard' costs (modules, inverters and other components)
- 'Soft' costs (installation and commissioning)





The Authority developed a new Regulatory Framework for Small Scale Grid Connected Solar PV Systems :

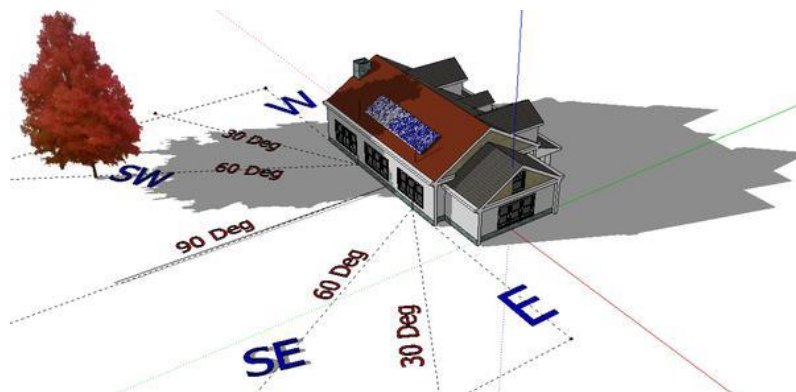
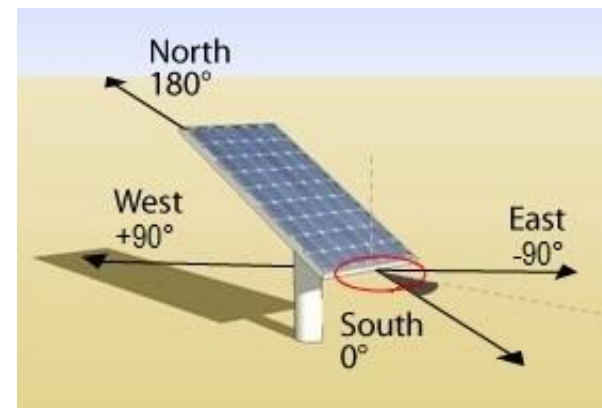
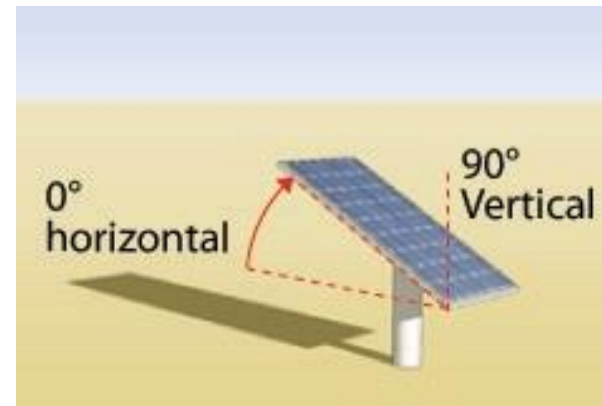
- Technical Standards
- Connection Guidelines/process
- Incentive Mechanism
- Specific issues on the Safety of PV system
- H&S criteria on construction sites



Connection Guidelines




- Orientation and Inclination of PV modules: factors to be accounted for when planning to install photovoltaic panels.
- The best orientation is South
- The best inclination for fixed solar cells in the Sultanate of Oman throughout the year is from 20° to 24° ;
- Shadowing from objects or other buildings.
- Capacity limit ($\leq 50\%$ of the connected load)





Connection Process



Consultation Stage

Contact your electricity distribution company to obtain a list of contactors authorized to assess your home for the installation of Solar PV. These contactors are approved and certified by DCRP (Distribution Code Review Panel)



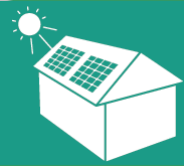
Design Stage

The Contractor will help you choose a design that is suitable for your home. The proposed design will be then submitted to your local electricity company for approval. Your contractor will ensure all approvals and permits are obtained before installation.



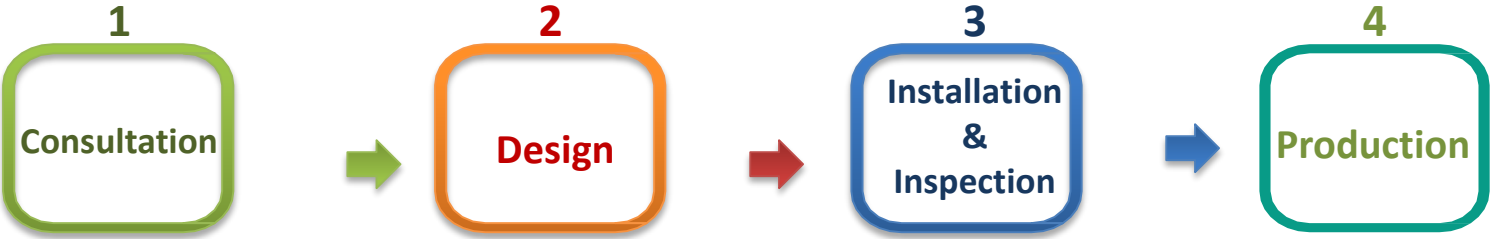
Installation & Inspection Stage

Once installation is completed by the contractor, the distribution company will be notified in order to complete the required inspection process



Production Stage

Upon approval, your system will be connected to the electricity grid. You're now all set to begin producing solar energy





Rooftop Solar Incentive Scheme



- Customer funded PV systems installed at premises will, subject to compliance with certain criteria, be eligible for remuneration at the relevant BST for PV production exported to the grid as below:

Bulk Supply Tariff (BST): 2017

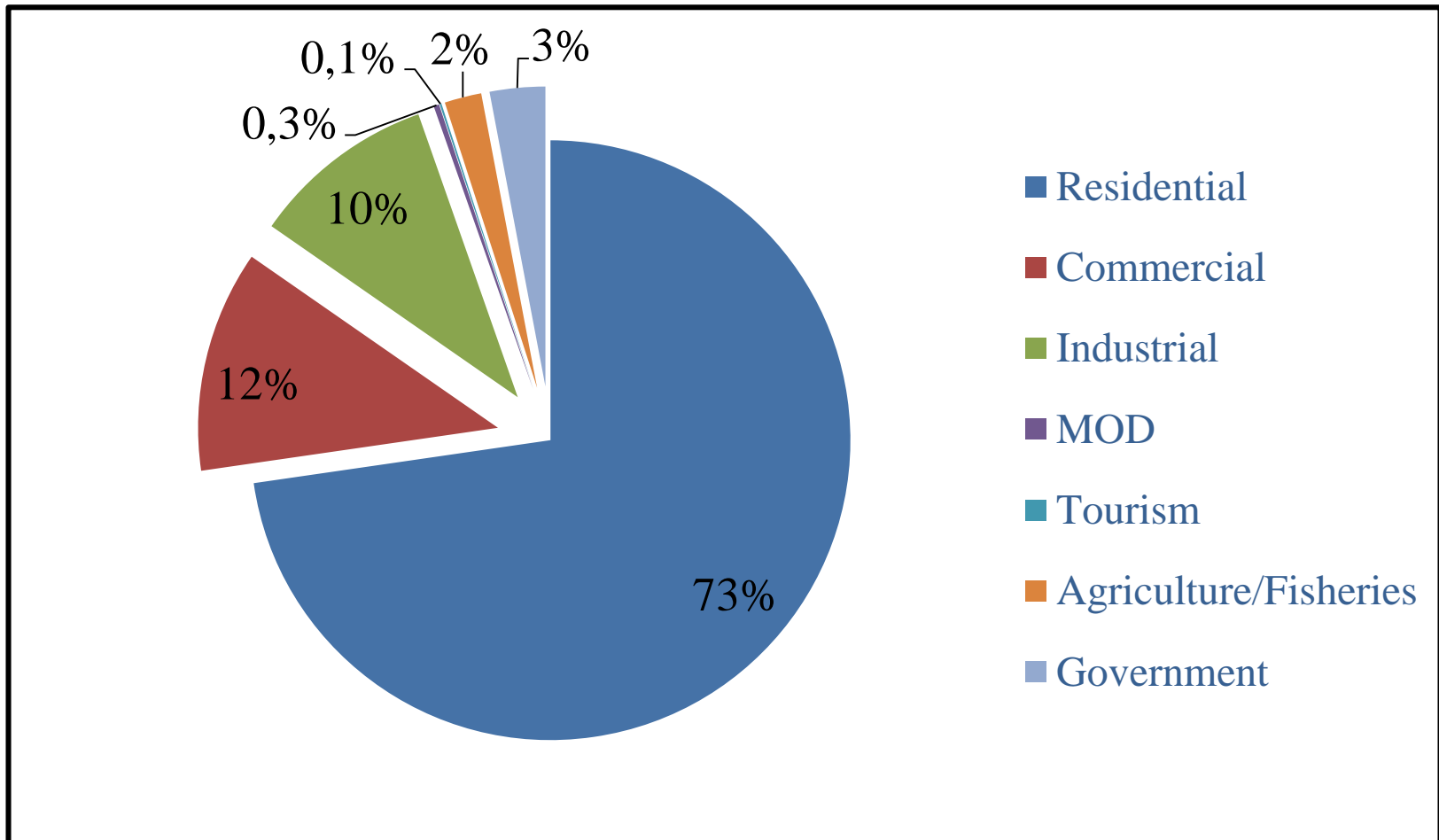
<i>Baiza per kWh</i>	Off Peak	Night Peak	Weekday Day-peak	Weekend Day-peak
January to March	12.0	12.0	12.0	12.0
April	14.0	14.0	14.0	14.0
May to July	17.0	26.0	67.0	39.0
August to September	15.0	21.0	26.0	19.0
October	14.0	14.0	14.0	14.0
November to December	12.0	12.0	12.0	12.0



Residential PV Programme: why?



- Electricity subsidy has increased from 113 mRO in 2006 to 510 mRO in 2016
- Electricity supply to residential customers is heavily subsidised
- Benefits of gas savings and emission reductions

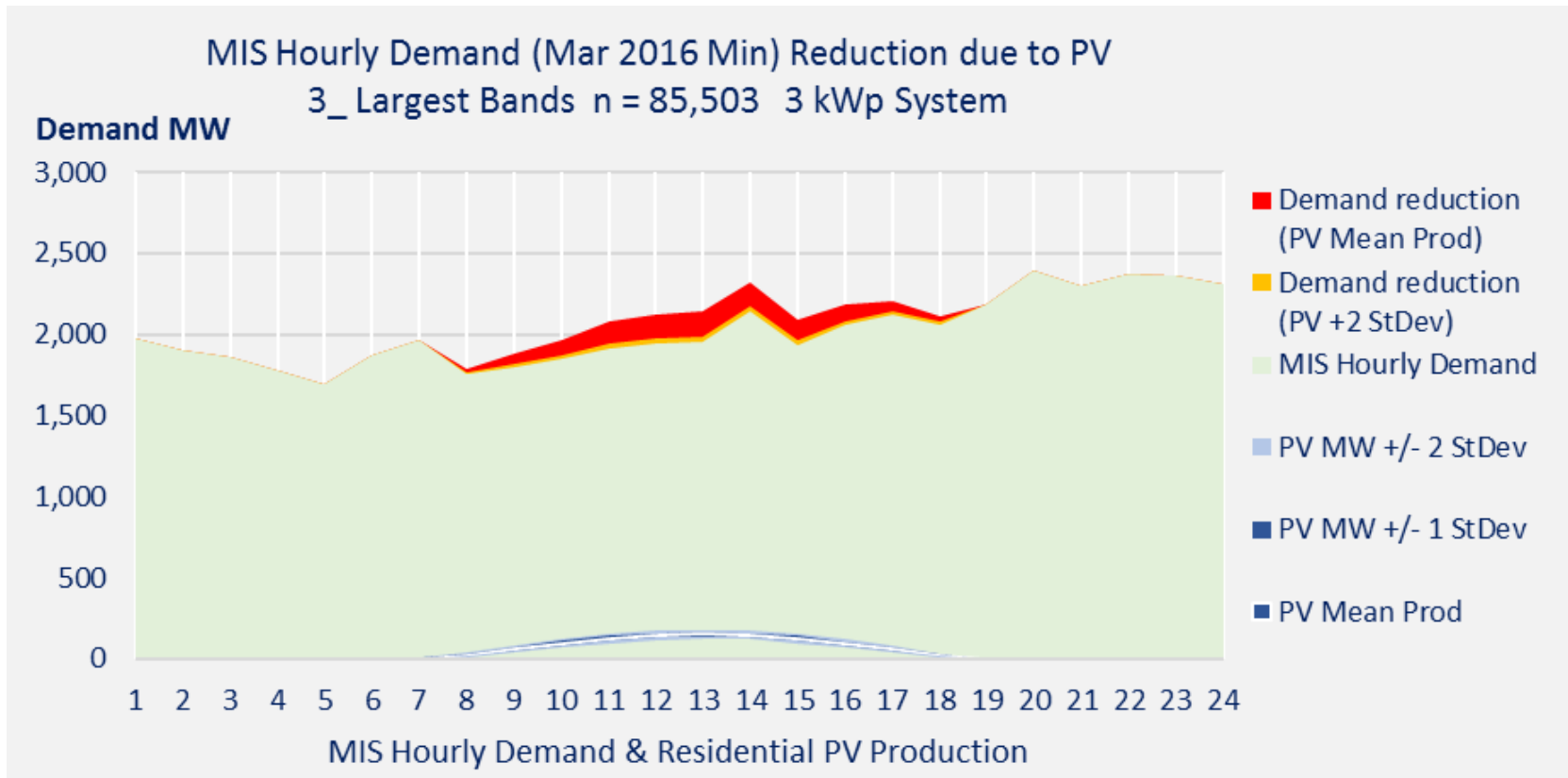




Residential PV Programme: Potential!



- gas savings over 25 years of between 2 billion Sm³ (10% MIS Res. Custs., 3kWp systems)
- CO₂ emission reductions over 25-years of between 3.2 million tons
- average reductions in annual customer bills of between 42%
- lower investment in electricity networks and production capacity



Source: AER Public Consultation on Residential PV in Oman

Renewable Energy Target



National Energy Strategy to 2030: Ensure a minimum quota for renewables to be implemented when planning for future capacity needs for the Sultanate.

- Renewable Energy Target: **10% at minimum by 2025.**
- large scale Solar IPP (RFQ by Dec 2017)
- solar rooftop



Thank you