

School of Electrical, Electronics and Communication Engineering

Course Code : BEEE4001

Course Name: Smart Grid and Energy Mngement

UNIT III

Smart Metering and PLC

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Name of the Faculty: Dr. Shagufta Khan

Program Name: B.Tech

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1. Introduction of Smart Meters
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3. **Cost comparison**
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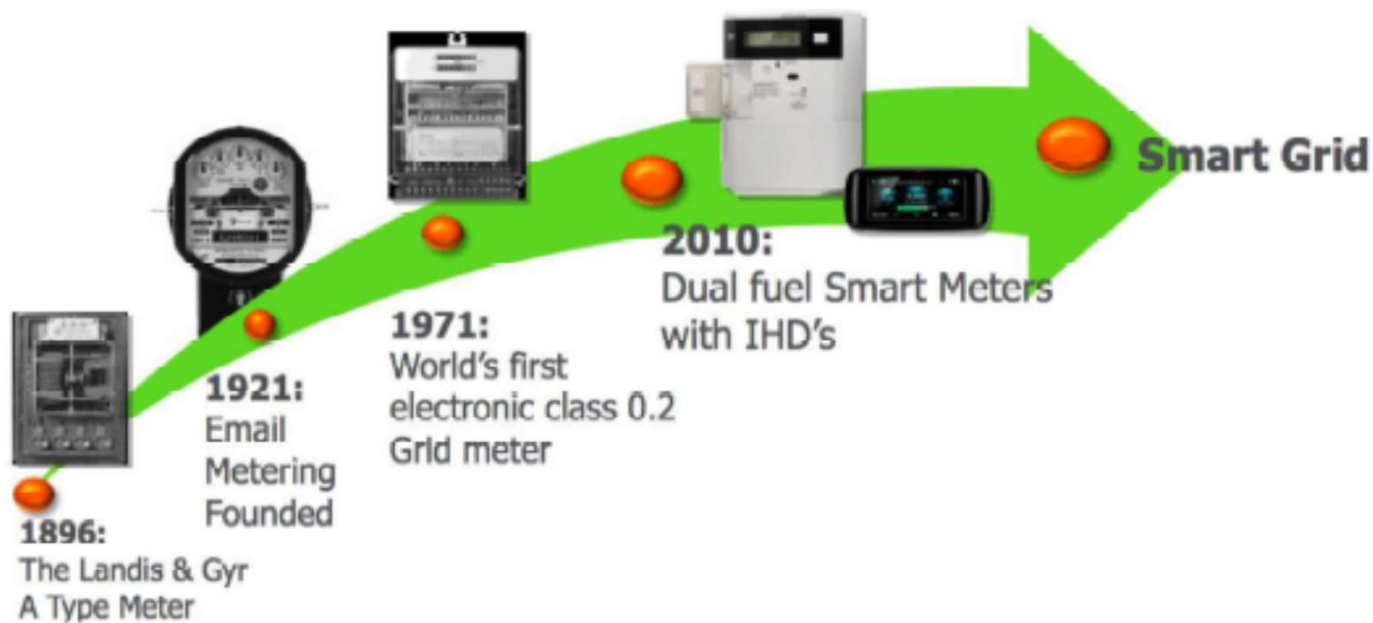
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Meters are measurement devices used by **utilities to communicate information** for billing customers and operating their electric systems.



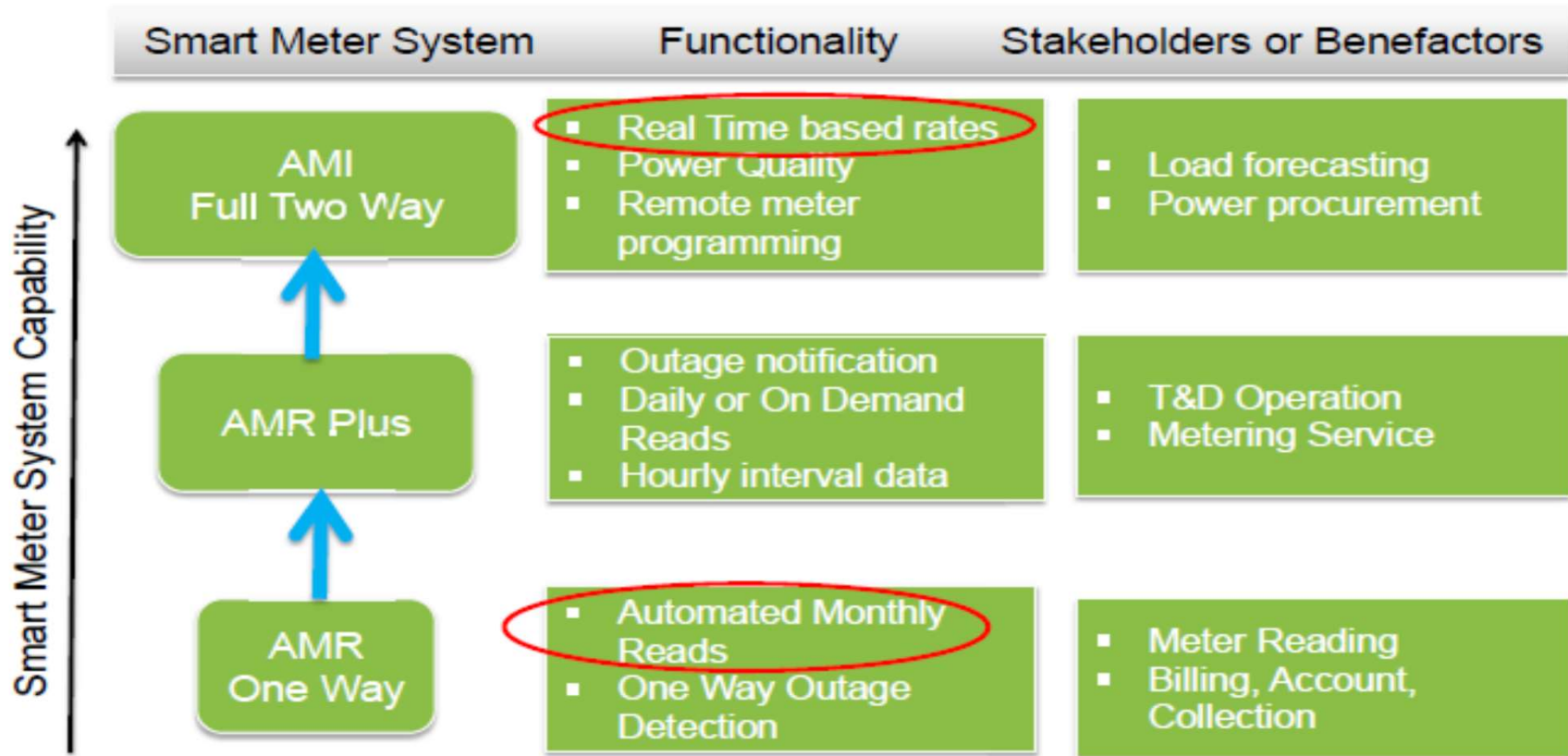
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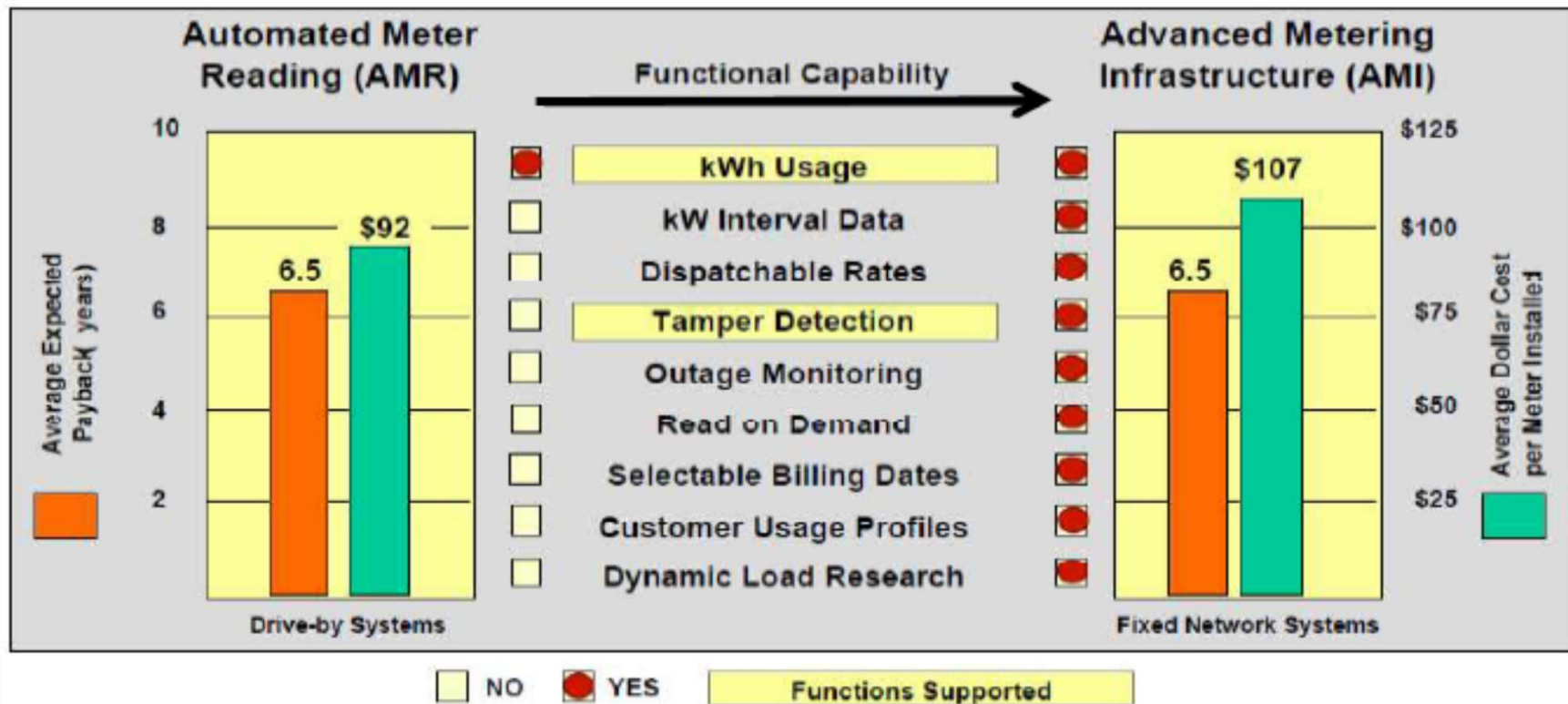


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AMR/AMI AVERAGEEE COST & FUNCTION COMPARISON



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	Hybrid Fibre Coaxial	Asymmetric digital subscriber line	Powerline Communication
	HFC	ADSL	PLC
Infrastructure	<ul style="list-style-type: none"> Fiber+Coaxial cable and copper pair¹ (New deployment) 	<ul style="list-style-type: none"> Copper pair (existing telephone lines) 	<ul style="list-style-type: none"> Electric wires (existing power grid)
Shared Medium	Yes (Typically 1000 users ²)	No (Dedicated line per user)	Yes (Approx. 200 – 250 users)
Services	<ul style="list-style-type: none"> Triple play: TV+Telephony+Broadband 	<ul style="list-style-type: none"> Broadband - Pre-launching: TV, VoD - Testing: Telephony (VoDSL) 	<ul style="list-style-type: none"> Broadband Telephony (VoPLC) - Testing: VoD, energy services, PLC in-home services
Data transmission rate	<ul style="list-style-type: none"> 45 Mbps(down)/10Mbps (up) Commercial offers usually up to 2 Mbps 	<ul style="list-style-type: none"> 4 - 6 Mbps (ADSL) Typically Asymmetric 	<ul style="list-style-type: none"> 45 Mbps (up + down) <u>New generation: 200 Mbps</u> <u>Symmetric</u>
CAPEX per client ³	HIGH	MID-LOW	<u>MID-LOW</u>

1 Copper wire necessary for voice service in non-integrated HFC networks
 2 Strongly dependant on network design
 3 Details subject to NDA

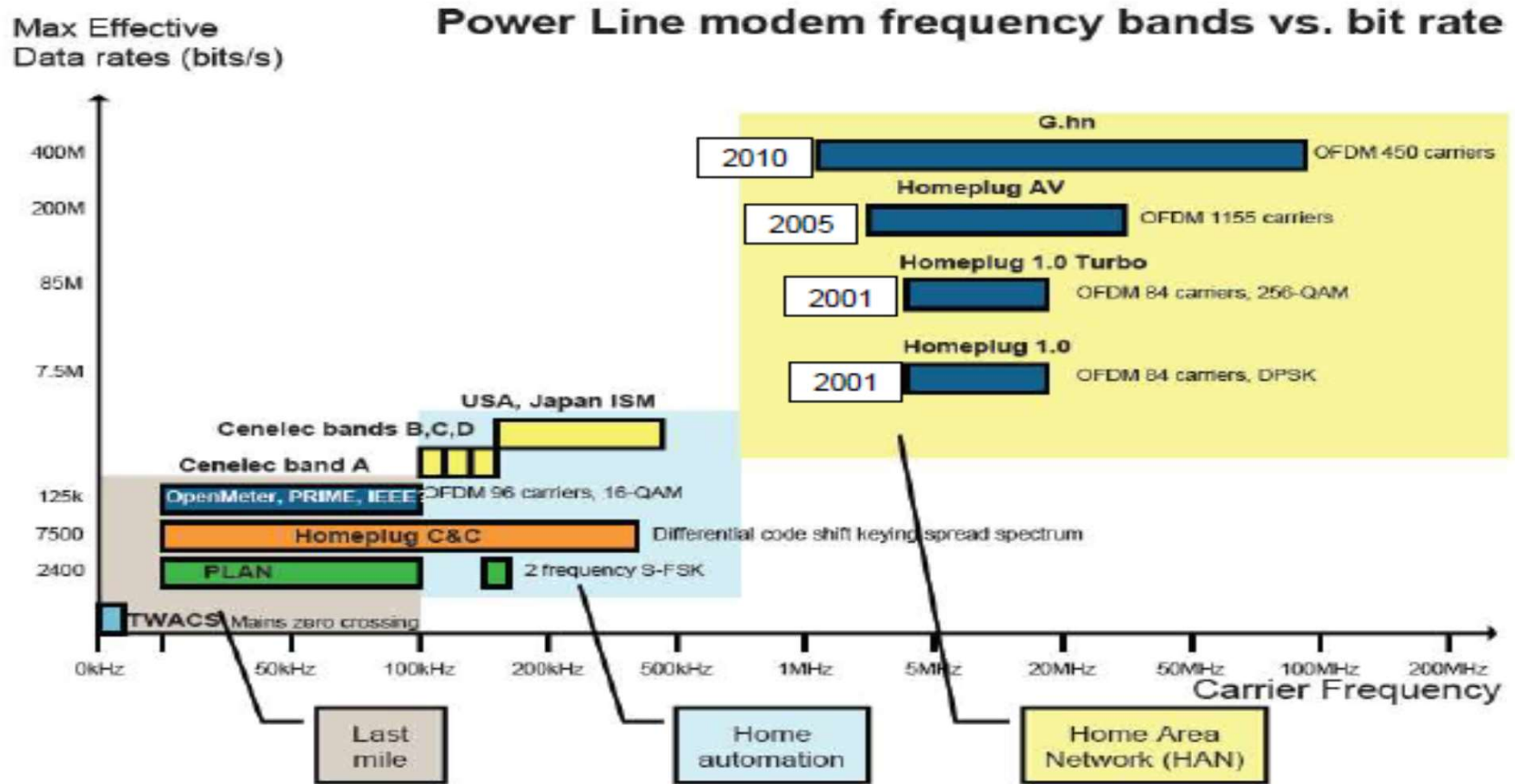
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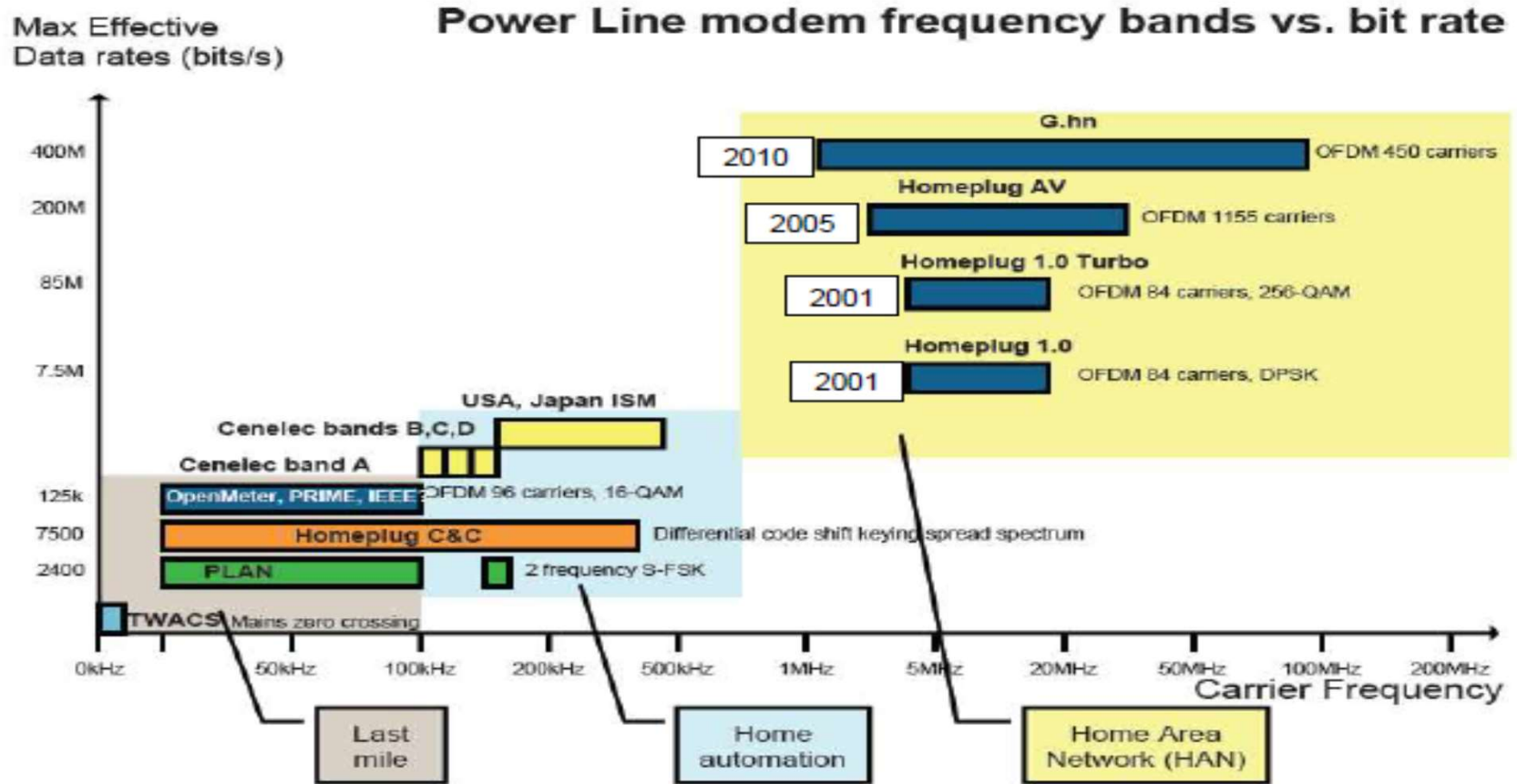
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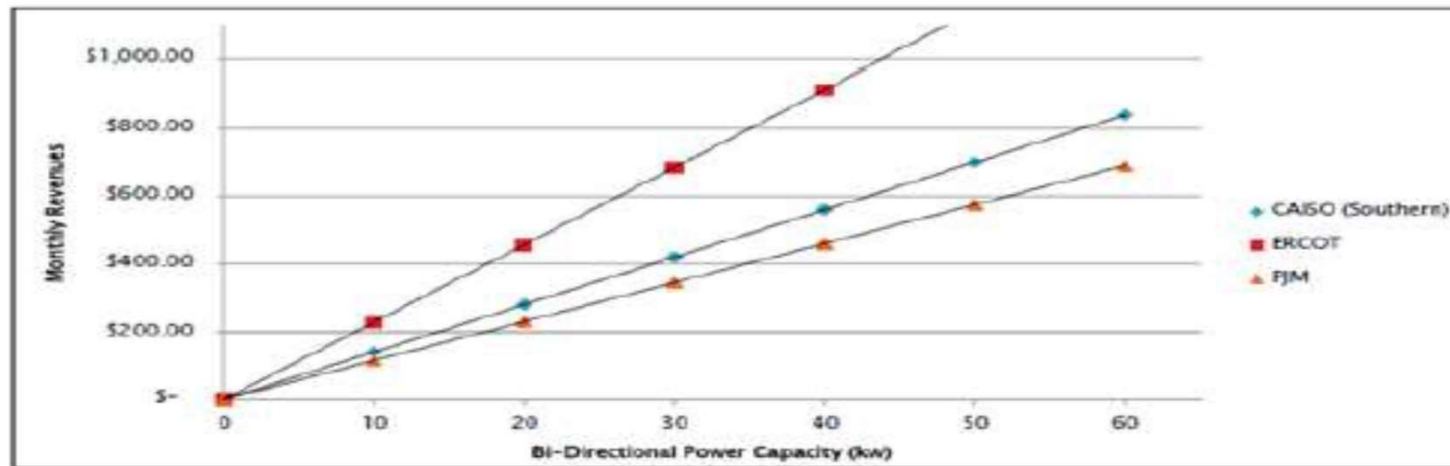


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2011 Monthly Bi-Directional Power Capacity Revenues



Assumptions:

- Lease Price: \$290/month
- 15KW bi-directional capability
- 12,000 miles driven per year
- Typical operation from 9am to 5pm (parked 90% of the time)
- 2011 remuneration values for California ISO, in Southern California

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