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Adani Green Energy Limited

O&M Excellence through ENOC

Feb 2021

CONTENTS

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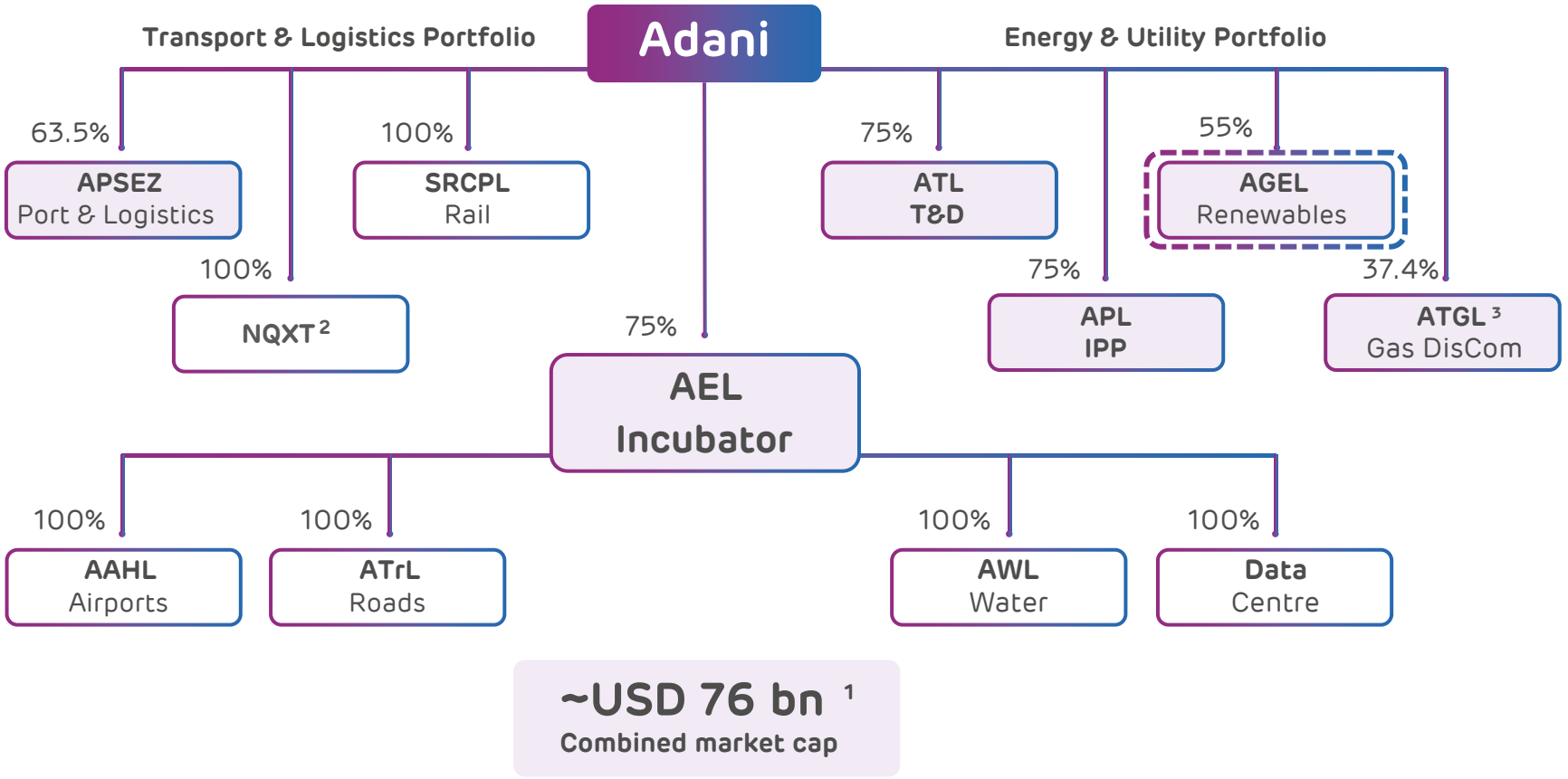
Adani Group

Adani Group: A world class infrastructure & utility portfolio



~USD 76 bn [1]
Combined market cap

Adani

- **Marked shift from B2B to B2C businesses -**
  - **ATGL** - Gas distribution network to serve key geographies across India
  - **AEML** - Electricity distribution network that powers the financial capital of India
  - **Adani Airports** - To operate, manage and develop eight airports in the country
- **Locked in Growth 2020 -**
  - Transport & Logistics - Airports and Roads
  - Energy & Utility - Water and Data Centre

Opportunity identification, development and beneficiation is intrinsic to diversification and growth of the group

1. As on Feb 19 , 2021, USD/INR – 72.6 | Note - Percentages denote promoter holding
2. NQXT – North Queensland Export Terminal | Light purple color represent public traded listed verticals
3. ATGL – Adani Total Gas Ltd

Adani Group: Decades long track record of industry best growth rates across sectors

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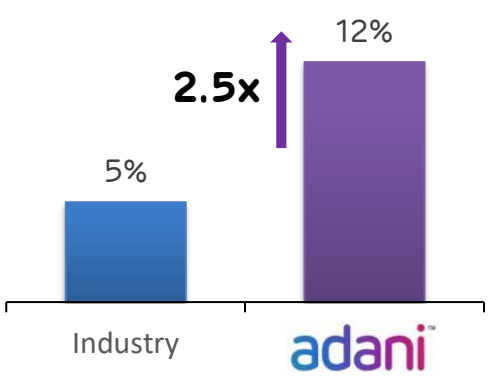
Port Cargo Throughput (MT)

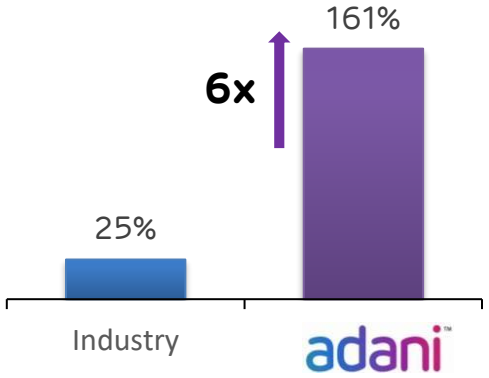


2014	972 MT	113 MT
2020	1,339 MT	223 MT

APSEZ

Highest Margin among Peers globally
EBITDA margin: 70%[1,2]
Next best peer margin: 55%

Renewable Capacity (GW)

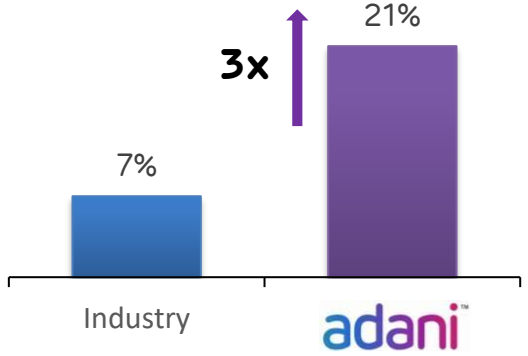


2016	46 GW	0.3 GW
2020	114 GW	14.8 GW[6]

AGEL

Worlds largest developer
EBITDA margin: 89%[1,4]
Among the best in industry

Transmission Capacity (ckm)

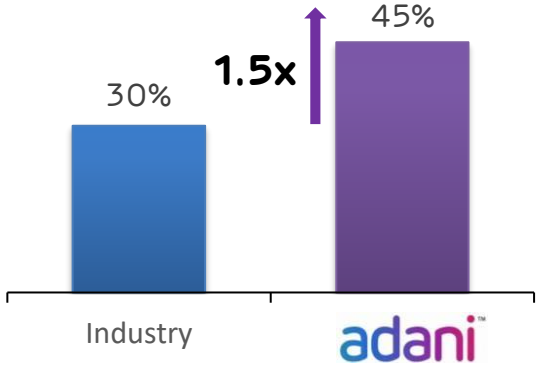


2016	320,000 ckm	6,950 ckm
2020	423,000 ckm	14,739 ckm

ATL

Highest availability among Peers
EBITDA margin: 92%[1,3,5]
Next best peer margin: 89%

CGD[7] (GAs[8] covered)



2015	62 GAs	6 GAs
2020	228 GAs	38 GAs

ATGL

India's Largest private CGD business
EBITDA margin: 31%[1]
Among the best in industry

Transformative model driving scale, growth and free cashflow

Note: 1 Data for FY20; 2 Margin for ports business only, Excludes forex gains/losses; 3 EBITDA = PBT + Depreciation + Net Finance Costs – Other Income; 4 EBITDA Margin represents EBITDA earned from power sales and exclude other items; 5. EBITDA margin of transmission business only, does not include distribution business. 6. Contracted & awarded capacity 7. CGD – City Gas distribution 8. Geographical Areas - Including JV | Industry data is from market intelligence

Adani Group: Repeatable, robust & proven transformative model of investment

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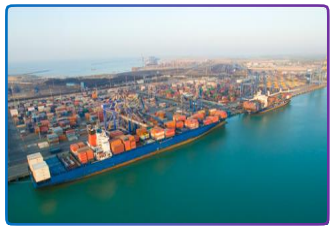
Phase	Development		Operations		Post Operations

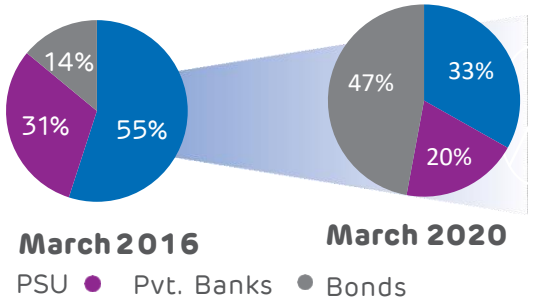
Activity

Origination	Site Development	Construction	Operation	Capital Mgmt
• Analysis & market intelligence • Viability analysis • **Strategic value**	• Site acquisition • Concessions and regulatory agreements • **Investment case development**	• Engineering & design • Sourcing & quality levels • **Equity & debt funding at project**	• **Life cycle O&M planning** • Asset Management plan	• Redesigning the **capital structure** of the asset • **Operational phase funding consistent with asset life**

Performance

India's Largest Commercial Port (at Mundra) Highest Margin among Peers	Longest Private HVDC Line in Asia (Mundra – Mohindergarh) Highest line availability	Largest Single Location Private Thermal IPP (at Mundra) High declared capacity utilization of 89%[1]	648 MW Ultra Mega Solar Power Plant (at Kamuthi, TamilNadu) Constructed and Commissioned in nine months	In FY20 issued 7 international bonds across the yield curve totalling~USD4Bn **All listed entities maintain liquidity cover of 1.2x- 2x as a matter policy**





1. FY20 data for commercial availability declared under long term power purchase agreements

AGEL : Replicating Group's Transformational Growth Profile

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	Total Portfolio	Diversified Portfolio	ESG
Development	**14,815 MW** [1] **3,245 MW** in Operation **2970 MW in** Ramp-up **8,600 MW** Awarded Pipeline	**11 states** 72% solar; 11% wind; 17% wind-solar hybrid	**Pure-play Solar & Wind Assets**

	100% Contracted Capacity	Counterparty profile[2]	EBITDA margin [3]
Operations	**Fixed tariff** **PPA life: 25 years Tariff profile** Average Portfolio tariff: INR 3.24/unit	**Sovereign: 78%** State DISCOMs: 15% Non-govt.: 7%	**89%**

	Efficient Capital Management	Monetization (DBFOT[4])	Investment Grade (IG) Ratings
Value Creation	**Access to International markets** **Diversified sources of funding** **Elongated maturities up to 20 years**	**50% stake** [5] **bought by TOTAL SA** in Operational Solar Projects **First phase - 2,148 MW** **Second phase - 205 MW**	**First IG rated Issuance** **Endeavor to maintain IG rating in all future issuances**

Note:
1. Includes 50*3 MW of wind projects under-acquisition from Inox and 20 MW solar power plant under acquisition from Hindustan Powerprojects
2. Based on estimated revenue-mix on fully built-up basis for overall portfolio of 14.8 GW
3. EBITDA margin from power supply in FY20
4. Design Build Finance Operate Transfer
5. TOTAL SA invested INR 3707 Cr in the first phase and INR 310 Crore in the second phase towards 50% stake and other instruments in the JV that houses these assets

PPA - Power Purchase Agreement ; AGEL: Adani Green Energy Limited

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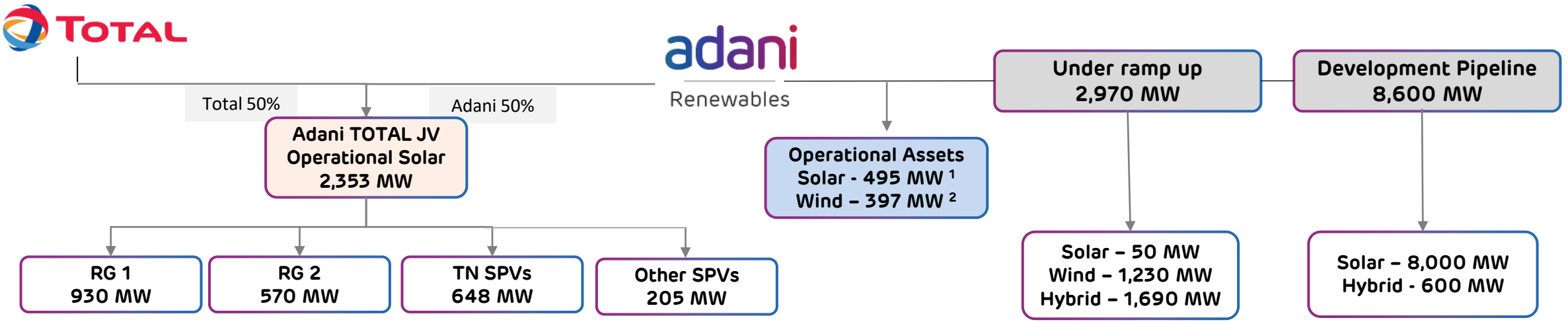
Company Profile

AGEL: Transformational Renewable Company

Largest Listed Renewable Company in India	3,245 MW – Operational + 2,970 MW – ramp up in 5–12 months
Site Plan	Over 30 GW sites identified & under acquisition
Development Pipeline	8,000 MW Solar 600 MW Hybrid
Upcoming Tenders	Over 11,000 MW in pipeline



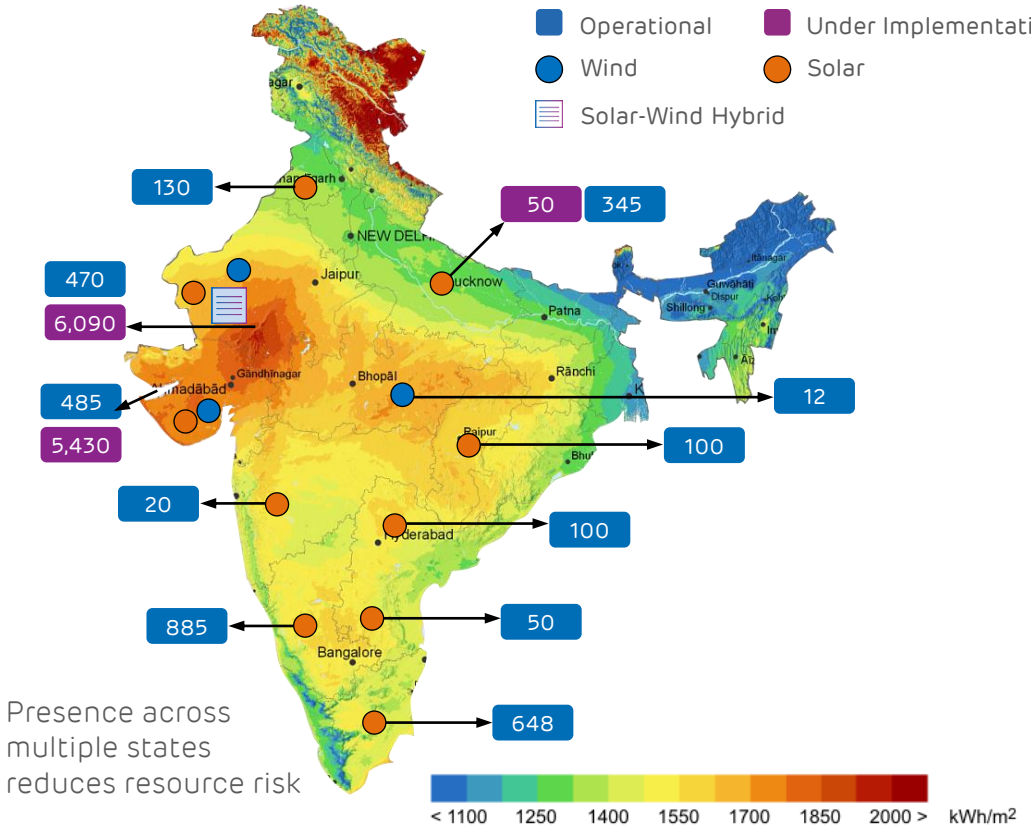
Business and asset development philosophy mirrors Group's focus on Quality Development, Operational Efficiency and Robust Capital Management

1. Includes 20 MW solar plants under acquisition from Hindustan Powerprojects
2. Includes 150 MW wind assets under acquisition from Inox

RG1: Restricted Group 1, RG2: Restricted Group 2

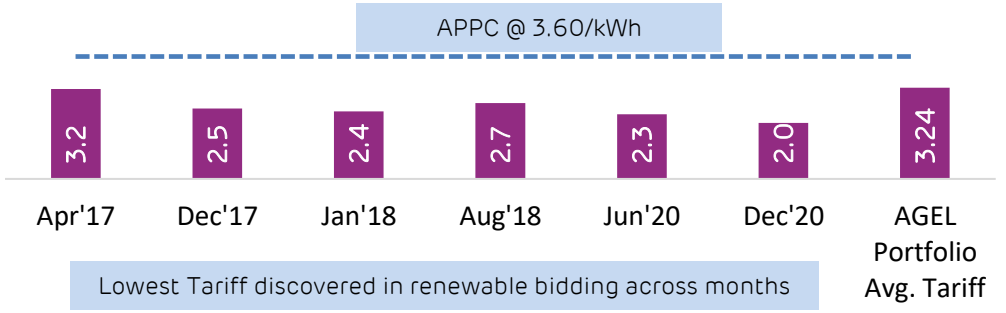
AGEL: Large, Geographically Diversified Portfolio

14,815 MW Portfolio [1] | 3,245 MW operational



Presence across multiple states reduces resource risk

Average AGEL tariff below APPC [2]



78% Sovereign Counterparties

Resource and Counterparty Diversification

Presence across 11 resource-rich states 13 different counterparties

100% Contracted portfolio

Fully Contracted Portfolio

25-year fixed tariff PPAs

Ranked as Largest Solar Power Developer in the World by US based MERCOM Capital

1 Includes 150 MW wind assets under acquisition from Inox and 20 MW solar plants under acquisition from Hindustan Powerprojects
2 APPC: National average power purchase cost

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AGEL: O&M Excellence through ENOC

Best in Class O&M Policies

- AGEL is currently operating 80+ plants spread across 11 states. Portfolio managed by O&M team of 630 personnel
- Cluster based governance model: Personnel spread across Central office → Cluster teams → Site personnel
- Enables smooth governance allowing efficient utilization of manpower and spares across multiple project sites

Centralized monitoring & Diagnostics

- Scalable operations with centralized monitoring and diagnostics
- Seamless integration of technology with ENOC
- Dust Detection System (DDS) for measuring the soiling loss and optimizing module cleaning cycle
- String monitoring for operational efficiency improvement
- Drone survey & IV curve scan for monitoring module health
- Surveillance cameras to ensure security & safety compliance

Operational Philosophy

- Lean site organization structure
- Optimized module cleaning cycle by comparing revenue loss due to soiling against the cost of module cleaning
- Atomization of water cleaning through compressed air to reduce water consumption during module cleaning
- Vegetation management, table tilting
- Ongoing repowering to compensate module degradation losses

Maintenance Philosophy

- Equipment and maintenance strategy classified based on criticality
- In-house O&M capabilities
- Warranty management for inverters & modules and AMC for transmission lines
- SAP based scheduling of plant maintenance
- Root Cause Analysis (RCA) framework decided based on severity, frequency and financial impact
- Cluster based governance model

Spares Management

- Time based inventory management system
- Tier1: Site specific store (indoor & outdoor) for replacement items and consumables
- Tier 2: High value spares (Transformer, switchyard breaker, gear box, generator, etc.) being maintained at cluster level
- Min/ max level set in stringent manner ensuring optimum inventory

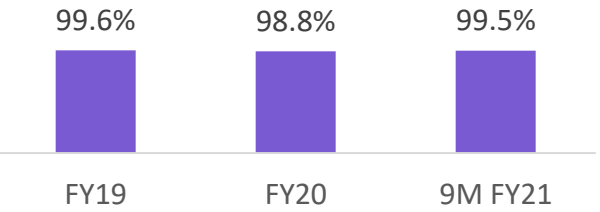
Operational Excellence driving Value

Traditional Approach	AGEL's approach
Plant level O&M	→ Centralized Operations via. ENOC

Predictive O&M process leading to reduction in:

- ✓ Frequency of scheduled maintenance,
- ✓ On-site labor costs
- ✓ Overall O&M cost

Solar Plant Availability



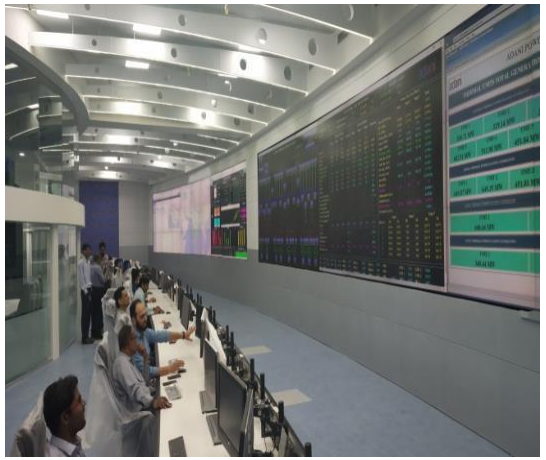
Note:
1. O&M – Operations and Maintenance; ENOC – Energy Network Operation Center

AGEL - ENOC: A state of Art, Live Monitoring Platform for Operational Plants

ENOC allows centralization of all operations and enables world class O&M practices

ENOC (Energy Network Operation Centre)

- Centralization of overall management of all Adani sites from a single location
- Data Analytics driven decision making
- Drive world class operational performance as sustainable competitive advantage
- Create potential for new business providing operations as a service to other power companies
- Sustainable & scalable platform

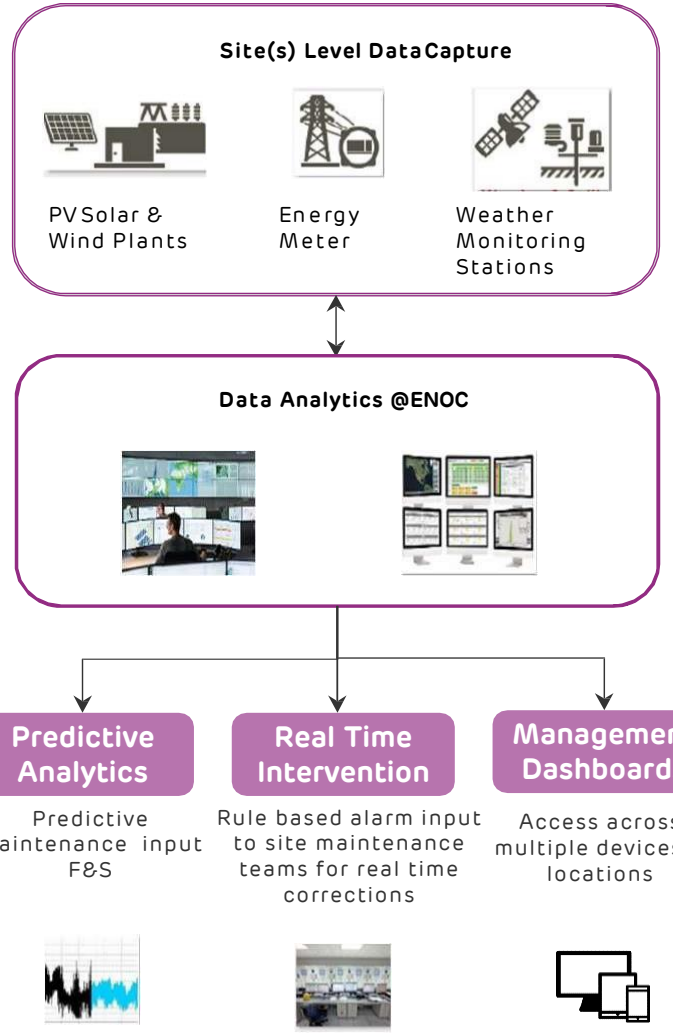


Ordinary Data → Deriving Intelligence → Informed Action

ENOC Benefits

Centralized Management	Ability to manage large number of sites Support increasingly complex operations
Fully Automated Operation	Minimal manual intervention leading to reliable data Reduce maintenance cost – increasing margins
Real Time Data Availability	Access plant performance data anywhere (desktop mobile) & anytime – both real time and historical data
Business Intelligence	Leveraging analytics and Machine learning to improve operational performance to industry leading levels

ENOC Operational Flow



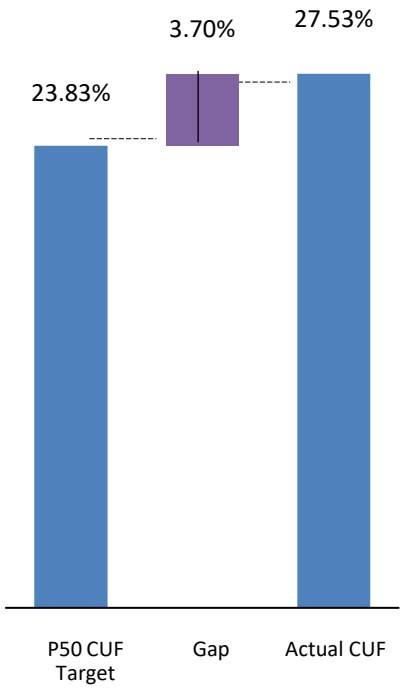
Note:
1. OnM – Operations and Maintenance

AGEL- CUF Waterfall to identify all the losses

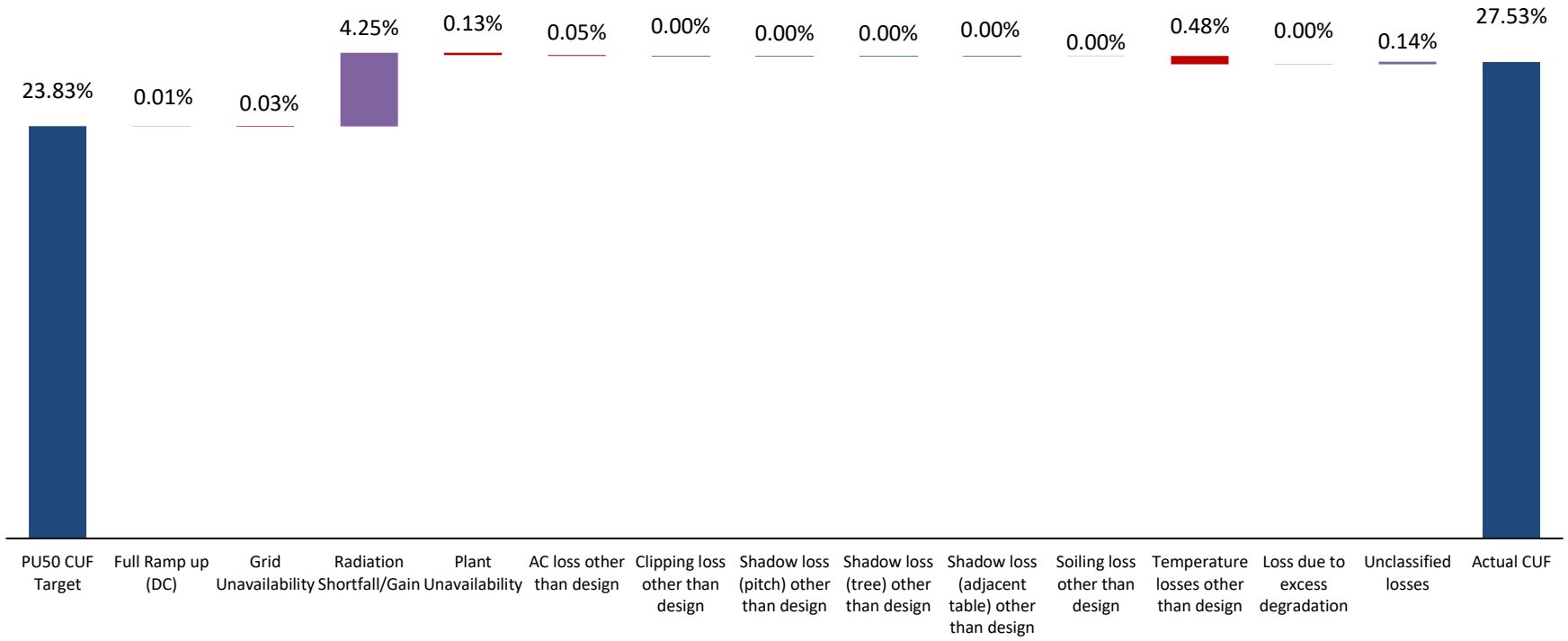
ENOC allows to identify the reasons of gap in CUF to get actionable insights

Traditional Approach

Solar



ENOC – Gap Identification at Granular Level



Note:
1. CUF – Capacity Utilisation Factor
2. ENOC - Energy Network Operations Center

Technology intervention enabling effective management of resource

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Climate Awareness and Climate Readiness

Reduction in water usage for module cleaning

- AGEL has been a pioneer in adoption of latest technologies for module cleaning
- Due to these latest innovations, **AGEL will be able to reduce the water consumption in FY21 from 117 mn liters to 64 mn liters y-o-y**

Water consumption reduction initiatives

Conventional Module Cleaning System (Manual)

Innovation in Module Cleaning System (Semi - Automatic)

Water less module cleaning (proposed)

Water Consumption / module / cycle

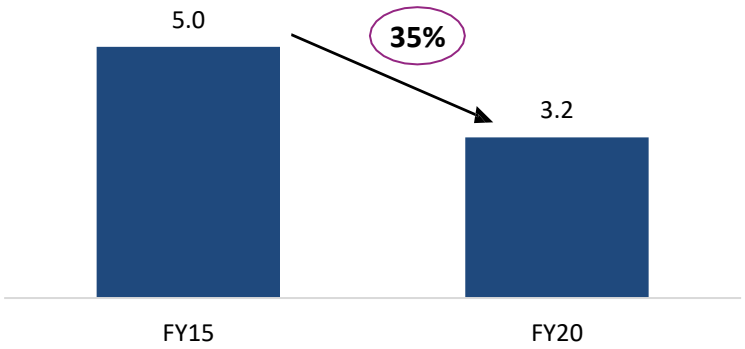
Indigenously developed module cleaning system

- Water consumption reduced by **46%**
- Safe operations
- Manpower cost is reduced by **75%**
- Increased efficiency
- Module cleaning cost reduced by **40%**
- Scalable system
- Implementing this system would reduce the O&M cost by **7.5%** annually across the existing portfolio

Efficiency in Land Usage

- Sites identified for setting up solar / wind projects process on waste land
  - Land which cannot be utilized for agriculture
- Leveraging technology to reduce land requirement

Land use in Acres/MW



Note:
1. O&M – Operations and Maintenance;

AGEL:
Way forward for O&M

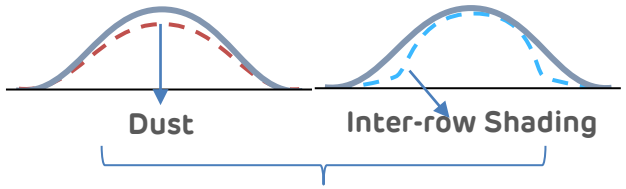
AGEL: Solar O&M – AI/ ML driven prescriptive analytics to lead the way forward

Our Current Practices (Descriptive & Predictive Analytics)

- Underperformance identification at string level (set of 22 modules)
- R tool based models for inverter performance
- Analysis of faults based on severity (generation loss) & frequency (number of occurrences)
- Tracker optimization to maximize generation gain
- OEM Benchmarking leading to procurement insights for future projects
- Plant scorecard
- Breakdown loss analysis
- Sensor accuracy analysis & correlation between sensor values
- Inverter efficiency analysis

Way Forward (Prescriptive Analytics)

- Analysis of faults based on severity & frequency using decision tree analysis
- Digital Twin based advanced analytics based on Big Data/Deep Neural Networks to identify module level underperformance



Underperformance signatures through pattern recognition

- Development of Asset Performance Monitoring (APM) tool to ensure:
  - zero unplanned downtime
  - Maintenance only when needed
  - Ability to manage O&M costs at acceptable levels

Notes:
1. AI/ ML – Artificial Intelligence/ Machine Learning
2. O&M – Operations & Maintenance
3. R Tool – a software for analytics
4. OEM – Original Equipment Manufacturer

AGEL: Wind O&M – AI/ ML driven prescriptive analytics to lead the way forward

Our Current Practices (Descriptive & Predictive Analytics)

- Underperformance identification at Wind Turbine Generator (WTG) level
- R tool based models for WTG performance analysis
- Analysis of faults based on severity (generation loss) & frequency (number of occurrences)
- WTG performance enhancement by correcting pitch (blade) and yaw (turbine rotation) angle
- Scheduling controllable shutdowns for maintenance by analyzing Windy and non-windy hours
- OEM Benchmarking leading to procurement insights for future projects
- Breakdown loss analysis
- Sensor accuracy analysis & correlation between sensor values

Way Forward (Prescriptive Analytics)

- Analysis of faults based on severity & frequency using decision tree analysis
- IOT Based Forecasting & Scheduling (F&S) modelling to be developed in-house to enable:
  - Automatic fetching of breakdown data from the field directly
  - revision of the forecasted generation
  - resulting into reduced manual intervention & increased F&S accuracy
- Development of Asset Performance Monitoring (APM) tool to ensure:
  - zero unplanned downtime
  - Maintenance only when needed
  - Ability to manage O&M costs at acceptable levels
- Prescriptive analytics on real time basis for correcting pitch (blade) and yaw (turbine rotation) angle thereby enhancing WTG performance

Notes:
1. AI/ ML – Artificial Intelligence/ Machine Learning
2. O&M – Operations & Maintenance
3. OEM – Original Equipment Manufacturer
4. IOT - Internet of Things

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Thank You