Scaling Innovation in Renewable Energy through the Cloud

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AWS Sustainability Journey

- Water+ by 2030 commitment: water use efficiency and water replenishment
- New data center construction incorporates use of low-carbon concrete
- Launch of Well-Architected for Sustainability Pillar
  - Launch of AWS Customer Carbon Footprint Tool
- Graviton processors provide better performance per watt than any other AWS processor
- Renewable energy to power data centers
- Amazon Sustainability Data Initiative (ASDI) provides free access to satellite data and climate models

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Asia: Carbon reduction opportunity

AWS is 5 times more energy efficient than the average on-premises data centers in the Asia Pacific region.

**Efficiency from chip to grid**

Cloud servers are responsible for the largest energy reduction, more than 67%, due to being more energy-efficient and more highly utilized.

Cloud data center facilities account for another 11% reduction by using power and cooling systems that are more efficient, bringing energy savings closer to 79%.

Enabling cloud service providers to source renewable power for their energy needs would further reduce the carbon footprint of workloads in the cloud.

**Carbon reduction potential of Cloud Infrastructure compared with surveyed APAC Enterprises and Public Sector Organizations**

*Source: 451 Research/S&P Global Market Intelligence after The Carbon Reduction Opportunity of Moving to the Cloud for APAC, 2021*
Energy Systems of the Future powered by the Cloud

Energy systems of the future bring together complex and distributed workflows.

The energy sector leverage transformative cloud-based services like data lakes, edge computing and IoT, and machine learning, to deliver the step-change in efficiency and performance.

Organizations are leveraging the cloud to modernize the grid to improve reliability and resiliency and to help bring renewable energy projects online sooner.
Data is Key to Innovation

- Growing exponentially
- From new sources
- Increasingly diverse
- Used by many people
- Analyzed by many applications

Cloud computing allows greater focus on core utility objectives

- Reliability
- Safety and security
- Agility and time to market
- Customer satisfaction
- Revenue and costs

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Scaling Innovation in RE through the Cloud

Leading renewable energy company India with a total installed capacity of 7.5 GW.

2,300 Wind Turbines
5 million Solar Panels
25 Hydro Sites
Scaling Innovation in RE through the Cloud

Challenge
Greenko was struggling to derive value from data derived from its wind turbines; rising IT infrastructure costs.

Solution
Using AWS IoT and serverless technologies, Greenko developed a scalable, cost efficient and secure IoT data ingestion and analytics platform, which eliminated data silos. The solution allows Greenko to get real time insights into the health of their wind turbines, spread across 15 states of India.

Results
✓ Greenko securely connected over 2200 wind turbines to the cloud—and achieved commercial-grade real time situation awareness—in under 24months
✓ Fully scalable and secure IoT industrial data lake.
✓ Ingests 800,00 tags per minute, with capability to expand to over 1 Million tags a minute.
✓ Real time dashboarding and analytics, with field to cloud latency of ≤1 minute.
✓ Work in progress to extend architecture to solar and hydro sites.
Imperatives for Successful Digital Transformation

1. Senior leadership team needs to be aligned and truly committed to and set clear directions and expectations with the rest of the organization on digital transformation via the cloud.

2. The most successful digital transformation started with an aggressive top-down goal that forced the organization to move faster than it would have organically.

3. It is important that organizations are trained on the cloud and comfortable with the concepts as part of the whole process.

4. Organizations should do a portfolio analysis to assess each application and build a plan for what to move short term, medium term, and last, more quickly, and it really helps inform how they move the rest.

5. Policy mechanisms, e.g. incentives for modernization that are not based only on CAPEX, can help facilitate digital transformation in the renewable energy sector.
Thank you!