THE ISSUE

- Odisha has raised the rate of electricity access from 82 percent in 2015 to 100 percent in 2019 through a combination of state and central government efforts.
- Odisha has reduced technical and commercial losses to 28 percent in 2018, down from 38 percent in 2015, but has not met its target of 20 percent.
- The state has deployed solar power alongside coal power, sought to change ownership of its utility companies and worked to build natural gas infrastructure in the state.
- Odisha can move forward by using energy to boost economic productivity and deploying energy storage solutions to integrate renewable energy into its grid.
- Opportunities to partner with the state include creating a renewable energy skills development institute, installing energy storage technologies, and providing billing efficiency solutions.

INTRODUCTION

Odisha struggles with significant challenges, including having some of the poorest and most isolated districts in India. Endowed with rich mineral resources and a long coastline, all the key topographical ingredients are in place to catapult the state’s economic development. To address some of the deep-seeded challenges faced by the state’s population, the state government, led by the Biju Janata Dal, has responded with populist measures that have won it unusual stability in office. Odisha’s governments have in the past shown that they are willing to play risk taker as the state, though shaky in its eventual execution, was an early adopter of power sector reforms. Paired with relative political stability, Odisha’s stature as an investment destination is rising. Those wanting to power it’s economic development will find that the key to success is supporting skills development and entrepreneurship in the power sector while supporting renewable energy integration efforts that pair well with the state’s broader development and service delivery initiatives.

Odisha has increased the share of the population with electricity access from 82 percent in 2015 to 100 percent in 2019. An important measure of the health of the state’s electric power sector is aggregate technical and commercial losses (AT&C), which measure line losses from transmission and distribution equipment, power theft, billing and collection inefficiencies, and customers’ inability to pay. Odisha’s AT&C losses in 2015 were 38 percent. Under the state’s “24x7 Power for All” plan formed with the central government, the state’s utilities
would target AT&C losses of 20 percent in 2019. As of 2018, the state’s utilities have decreased losses to 28 percent. Unlike the other states in this series, Odisha is not participating in the central government’s Ujjwal Discom Assurance Yojana (UDAY) scheme to improve the financial health of the country’s utilities, so it does not have targets for smart meter deployment. While smart meters have not yet been deployed in the state, government officials indicated in interviews that they were working with the central government’s Power Finance Corporation to do so. The city of Bhubaneswar has a target of deploying one million smart meters as part of its “Smart City” plan implementation.

Odisha has a target to install 2,377 megawatts (MW) of solar power in the state to contribute to the central government’s target of 100 gigawatts (GW) by 2022. As of July 2019, data from the Ministry of New and Renewable Energy indicate it has installed 397.28 MW, 17 percent of its goal.

**POWER SECTOR REFORMS UNDERTAKEN**

Over the past few years, Odisha has focused on deploying solar power—especially rooftop solar—as well as deploying coal power, determining control of its distribution companies, and building gas distribution for use in heating, cooking, and vehicle fueling.

Odisha began allowing grid-connected rooftop solar installations in August 2017. In November 2017, the state instituted a net metering program, crediting customers for the power generated from their rooftop solar systems as long as it makes up less than 90 percent of their annual consumption. In April 2019, the Odisha government gained central government approval to install 18 MW of solar on government buildings across the state. Odisha is building ground-mounted, utility-scale solar as well. In August 2017, German-based IBC Solar signed a power purchase agreement (PPA) with the central government’s Solar Energy Corporation of India for a 20 MW plant being developed in Odisha as part of a 270 MW tender awarded in 2016. In February 2018, Odisha announced a tender for 1,000 MW of solar projects in the state. Odisha’s electricity trading company Gridco signed two PPAs to buy power from solar projects that won bids in this tender: a 40 MW project developed by the National Hydroelectric Power Corporation (NHPC) and a 75 MW project developed by Aditya Birla Renewables. The NHPC plans to build an additional 60 MW of solar once the first 40 MW are completed. As solar power deployment increases and solar projects reach the end of their anticipated lives, the state expects an increasing waste disposal burden. As a result, CSIS assisted the Odisha Renewable Energy Development Agency (OREDA) in identifying the right partner to conduct a study on renewable energy waste and to help develop a policy on end-of-life solutions for solar panels and batteries in 2019.

Odisha makes use of its considerable coal reserves to generate most of its power, but not without issues. In August 2017, a breach in a coal ash pond owned by aluminum company Vedanta led the state’s Pollution Control Board (OSPCB) to order the company to temporarily shutter over 1,600 MW of coal-fired power capacity. Later that month, the OSPCB rescinded its order for some of the closures, allowing the company to keep 870 MW online. The state has attempted to develop new

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**Figure 1: Electrification (% of population)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Electrification</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>82% electrified</td>
</tr>
<tr>
<td>2019</td>
<td>100% electrified</td>
</tr>
</tbody>
</table>


**Figure 2: Aggregate Technical & Commercial Losses**

<table>
<thead>
<tr>
<th>Year</th>
<th>Losses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>28.00%</td>
</tr>
<tr>
<td>2018</td>
<td>38.00%</td>
</tr>
</tbody>
</table>


**Figure 3: Solar Deployment, July 2019**

<table>
<thead>
<tr>
<th>Capacity (MW)</th>
<th>Target (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>397.28</td>
</tr>
<tr>
<td>500</td>
<td>2,377</td>
</tr>
</tbody>
</table>

coal-based generation resources as well. In January 2018, India’s Minister of Petroleum and Natural Gas announced that central government-run natural gas company GAIL would build the country’s first coal gasification plant in Odisha. This plant would convert coal to synthetic gas that would be cheaper than natural gas for fertilizer production, but theoretically this could be used in power generation or to create transportation fuels. The plant began construction in September 2018 and is expected to be completed in 2022. The central government-run National Thermal Power Corporation (NTPC) has also been constructing a 1,600 MW supercritical coal plant—one that uses water heated and pressurized to a “supercritical” state to boost efficiency—and is expected to come online in September 2019.

Odisha’s distribution companies (discoms) have changed hands multiple times over the past two decades. The state has four discoms: Central Electricity Supply Utility (CESU), Western Electricity Supply Company of Odisha (WESCO), North Eastern Electricity Supply Company of Odisha (NESCO), and Southern Electricity Supply Company of Odisha (SOUTHCO). They were originally state-owned, but the state sold CESU to AES Corp and the other three to a central government-Reliance Corporation joint venture, BSES, in 1999. AES sold CESU in 2001, putting it back under the control of the Odisha Electricity Regulatory Commission (OERC), and OERC revoked the distribution licenses of the other three in 2015 due to poor technical and financial performance, putting them under the control of Gridco. As recently as September 2018, OERC was attempting to sell CESU to private buyers again with the hope that a new owner can reduce AT&C losses.

While not directly related to the power sector, the buildout of natural gas infrastructure in Odisha is relevant to the state’s management of energy resources, especially in transportation. In July 2017, the central government began construction of a liquefied natural gas (LNG) import terminal in Odisha, beginning a project to build out gas infrastructure across India. As part of this project, GAIL began supplying piped natural gas to homes in Odisha in October 2017 with a plan to increase the buildout of pipelines and the distribution to more households through 2019. GAIL, Bharat Gas Resources, and Adani Gas Limited announced in November 2018 they would invest Rs. 34 billion ($474 million) in Odisha over eight years to build pipelines for piped natural gas and fueling stations for vehicles using compressed natural gas (CNG), a cleaner alternative to diesel.

To follow the reforms and initiatives in Odisha’s power sector, please visit: https://indianstates.csis.org/states/odisha/.

POST-SAUBHAGYA
In September 2017, Prime Minister Narendra Modi announced the Saubhagya Scheme, an ambitious effort to provide electricity to the 40 million households that still lacked access. The government announced the completion of the initiative in early 2019. Now that Odisha has connected 100 percent of its population to power, some stakeholders in Odisha have suggested that the state should focus on using energy to boost livelihoods. Given the state’s large agricultural sector, off-grid electricity access solutions to store food are an important area where energy could support economic development. Mumbai-based Ekozen Solutions has deployed off-grid, solar-powered cold storage facilities in Odisha that can be located close to farmers’ fields. Odisha is also working to integrate renewable energy into its mostly coal-based grid. This will likely take the form of adding energy storage to the grid to make the addition of variable renewable energy easier.

OPPORTUNITIES FOR PARTNERSHIP

• A stakeholder from one of Odisha’s technical universities suggested that policies for skill development should focus on building skills that apply to multiple technologies, not just solar or wind technology installation. OREDA has indicated an interest in helping set up a skill development institute at Centurion University of Technology and Management or Kalinga Institute of Industrial Technology. International industry partners would be essential to help fund this opportunity that would not only support the growth of a skilled workforce in the state but also provide critical training to the government’s technical staff in the energy sector.

• The state government has expressed interest in installing battery storage or pumped hydroelectric storage on its grid to help integrate renewable energy. This is an opportunity for energy storage providers to lend their expertise and their products to a willing state grid.

• A stakeholder in Odisha indicated that the discoms are struggling to properly bill customers, causing issues for ratepayers who have to repeatedly contest incorrect bills. This problem, the stakeholder suggested, can be solved with the correct billing
management software. This could be an opportunity for a software provider to contract with Odisha’s discoms to streamline the billing process and make the lives of their customers easier.

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For more information on how to engage with this process please contact the secretariat of the U.S.-India State and Urban Initiative (IndianStates@csis.org).

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