

# KRISTINA SMELSER

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The following is a policy memo I wrote for a graduate-level UC Berkeley course *Energy & Society* in fall of 2019. Allowed the leeway to choose a topic and recipient, I decided to write to Governor Noem of South Dakota in support of a Green Bank to stimulate investment in clean energy.

**To:** Governor Kristi Noem of South Dakota  
500 East Capitol Avenue  
Pierre, S.D. 57501  
**From:** Kristina Smelser  
**Re:** Proposal to Establish South Dakota Green Bank

Despite a wave of new wind and hydroelectric projects, which contribute to now 70% of South Dakota's net electricity generated by renewable resources, the state still relies heavily on fossil fuel imports. Such dependence threatens the state's economy, deters its ability to create jobs for residents, and reduces its autonomy over energy prices. Potential for in-state renewable energy generation is vast and underappreciated: its wind and solar resources offer promising, yet largely untapped opportunities for energy generation. At present, institutionalized financial barriers prevent widespread commercial and residential renewable energy investment. In light of these barriers and the state's resistance to the overstepping of federal regulation, South Dakota should aim to close the gap between potential and actual investment in renewable energy.

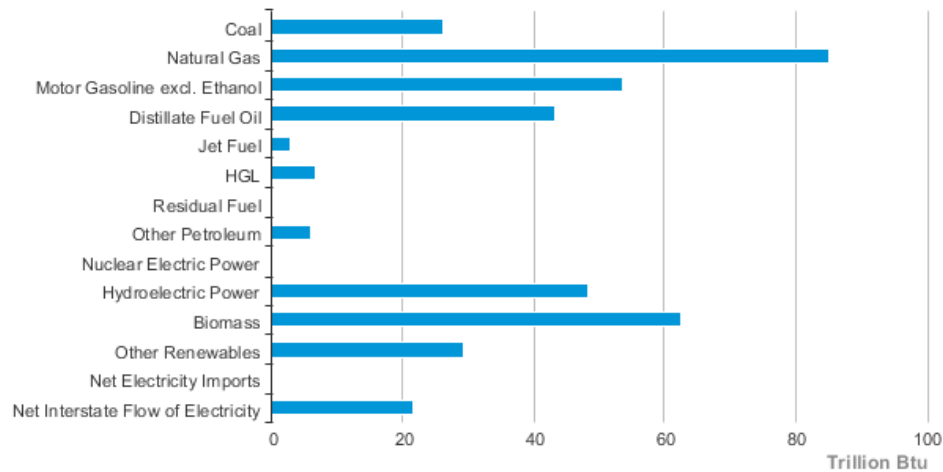
Thus, I propose that you, as governor, take a nation-leading role in clean energy by creating a South Dakota Green Bank. By helping secure low-cost capital for clean energy projects (such as wind, solar, hydroelectric, and geothermal power) at favorable rates and terms, a Green Bank would attract capital and homeowner investment in renewable energy, stimulate job growth, and make clean energy more affordable. Connecticut and New York recently piloted the first state-wide Green Banks which have significantly accelerated growth in the state's installed clean energy capacity, subsequently improving job creation, public health, and energy access. The effectiveness of these models stems from their ability to negotiate low-interest financing for home- and business owners, while mitigating private investors' risk through co-investment and credit enhancements (such as loan guarantees or loan loss reserves).

A primary obstacle to establishing a Green Bank in South Dakota, beyond the initial political opposition from conservative legislators, is the significant amount of funding needed. The entity thus must be introduced along with a revenue collection policy, such as a modest carbon tax. This policy, combined with borrowing through bonds, would allow the government to pilot a small-scale Green Bank that naturally grows and becomes profitable as returns on investment are realized. Although a carbon tax would increase energy prices in the short term, the entity would quickly begin facilitating new renewable energy projects. By providing new employment opportunities and building the infrastructure for sustainable, low-cost renewable energy generation, South Dakota's residents and businesses will soon reap considerable benefits. Despite the significant costs, resources, and labor that its establishment would require, a Green Bank would revolutionize South Dakota's energy industry while improving the financial independence and stability of its residents and businesses.

## Appendix

1. Fossil fuels still account for the majority of the state's energy consumption: about 22% of energy consumed is sourced from natural gas, 29% from petroleum, and 6.8% from coal (see below).<sup>i</sup>

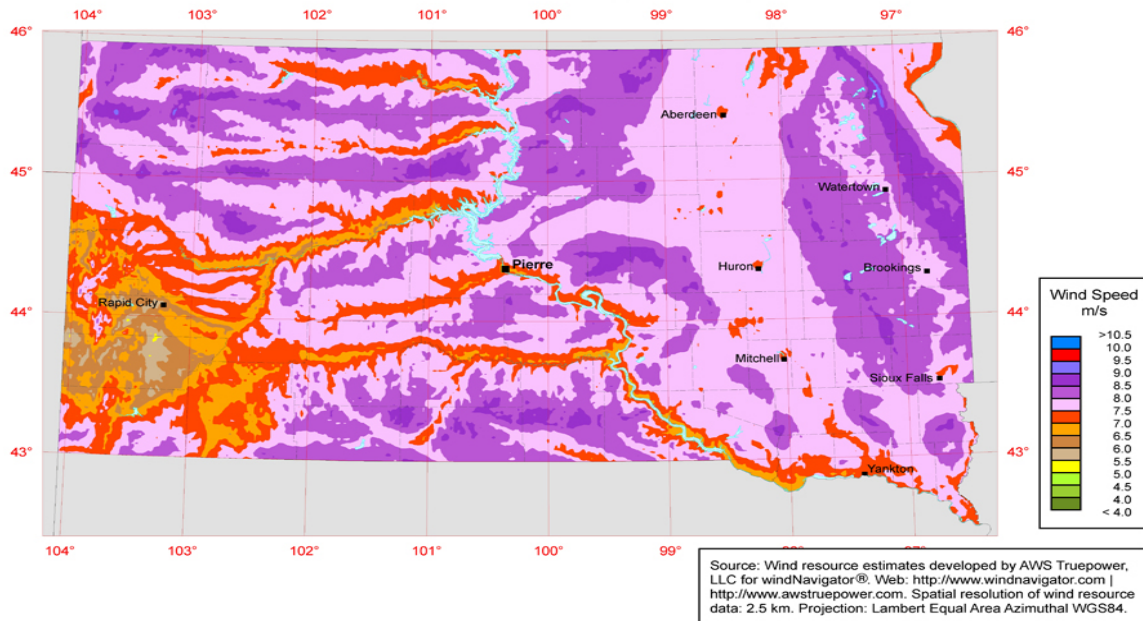
**South Dakota Energy Consumption Estimates, 2017**



Source: Energy Information Administration, State Energy Data System

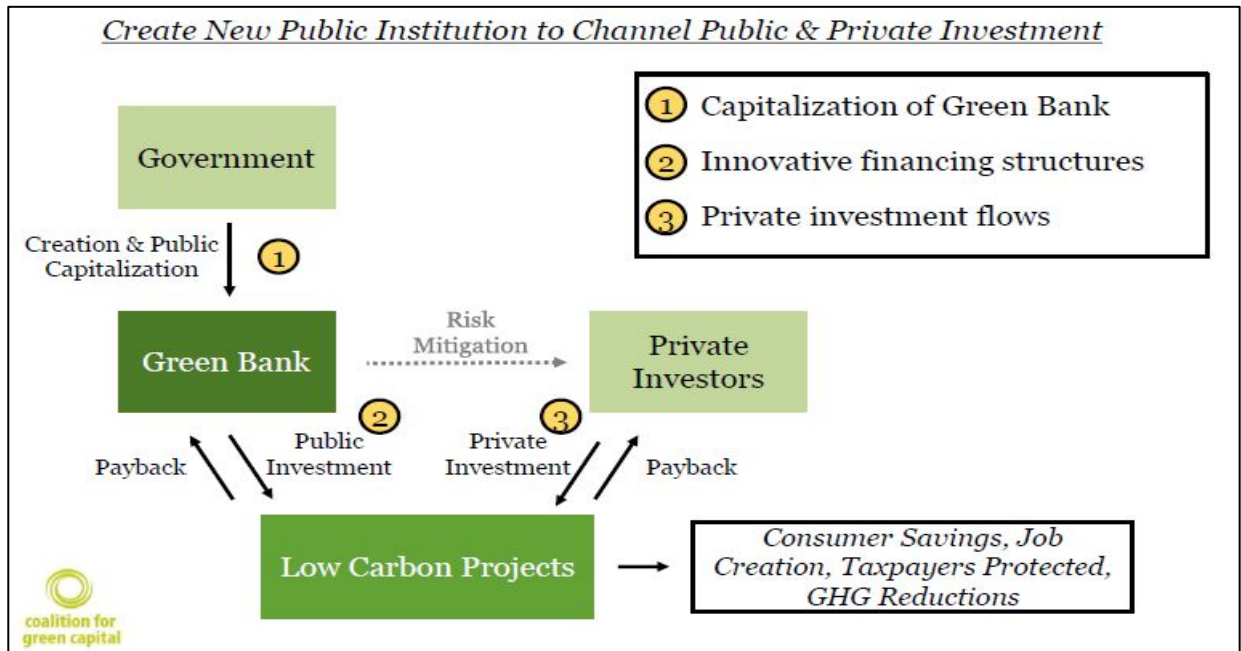
2. South Dakota's renewable energy resources are largely unrealized: ranked 5<sup>th</sup> in the U.S., its wind resource alone could provide 310x the state's current electricity needs (see below).<sup>ii</sup>

**South Dakota - Annual Average Wind Speed at 80 m**



3. South Dakota's lack of financial and market incentives makes it difficult for consumers and businessowners to invest in renewable energy. There are no state-specific solar rebates, tax credits, or sales tax exemptions for solar installation. Further, the state lacks legislation to offer low-interest financing (this model has accounted the majority of nation-wide solar installation).<sup>iii</sup>

4. Below is a diagram of the general structure of a basic Green Bank.<sup>iv</sup>



Established by the state’s General Assembly in 2011 as a component of the Connecticut Clean Energy Fund, the Connecticut Green Bank (CGB) offers services to residents, business owners, and building contractors such as low-interest financing, EV and PV subsidies, and comprehensive technical assistance. They also co-invest with capital providers to mitigate risk. Since founding, \$260 million in CGB capital has yielded impressive results: \$1.42 billion in private investment, 258.2 MW of newly installed clean energy capacity, 20,172 job years, reduced energy costs for 40,000 families, and a 5.8 million-ton reduction in CO<sup>2</sup> emissions.<sup>v</sup>

5. New York Green Bank (NYGB) was initiated in 2013 by Governor Andrew Cuomo as part of his larger clean energy strategy with similar goals to CGB. NYGB collaborates with clean energy companies whose progress is constrained by lack of financing. It targets financing markets by operating where there is limited competition, low technology risk, and high liquidity premiums.<sup>vi</sup>
6. CGB and NYGB have largely relied on funding from taxes paid by energy consumers. Although these taxes are an appealing alternative to issuing bonds, they would face strong resistance in a state where residents earning minimum wage must work 53 hours per week to afford a 2-bedroom rental home.<sup>vii</sup>
7. South Dakota can instead consider a modest carbon tax that includes fossil fuels imported from out-of-state. Although this would inevitably increase energy prices in the short run, the tax would yield long-term decreases by providing the seed funding for a Green Bank that stimulates in-state renewable energy investment. See below for simple back-of-envelope calculations estimating revenue from a \$5/metric-ton tax applied to CO<sup>2</sup> emissions from power plants, manufacturers, refineries, and other polluters, combined with \$10 million in issued government bonds. Estimated CO<sup>2</sup> emissions are based on EIA data on yearly state-specific, energy-related CO<sup>2</sup> emissions (note that this estimate disregards electricity imported from out-of-state, which would also be taxed under this model)<sup>viii</sup>:

<b>Carbon Tax</b>	$(15,100,000 \text{ tons/year}) * (\$5.00/\text{ton}) = \$75,500,000/\text{year}$
<b>Total Capital (Year 1)</b>	$\$75,500,000 \text{ (carbon tax)} + \$10,000,000 \text{ (bonds)} = \$85,500,000$
<b>Private Capital Mobilized</b>	$\$85,500,000 * [6-8] = [\$513,000,000 - \$684,000,000]$

These methods would provide the initial investment for building the Green Bank’s infrastructure and financing its earliest projects during its first year. Based on CGB’s and NYGB’s public-to-private-investment leverage ratios of 6:1 and 8:1 respectively<sup>v,vi</sup>, the Green Bank could garner \$513-684 million in private investment with its initial \$85 million investment. Through careful investment, the entity would soon become self-sustaining and eventually profitable enough to pay back the bonds, relying solely on carbon tax revenue and private investment in future years.

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<sup>i</sup> South Dakota—State Energy Profile Overview. (n.d.). Retrieved November 20, 2019, from U.S. Energy Information Administration (EIA) website: <https://www.eia.gov/state/?sid=SD>

<sup>ii</sup> WINDEXchange: Wind Energy in South Dakota. (n.d.). Retrieved November 20, 2019, from <https://windexchange.energy.gov/states/sd>

<sup>iii</sup> 2019 South Dakota Home Solar Incentives, Rebates, and Tax Credits. (n.d.). Retrieved November 20, 2019, from Solar Power Rocks website: <https://www.solarpowerrocks.com/south-dakota/>

<sup>iv</sup> Basic Green Bank Model. (n.d.). Retrieved November 28, 2019, from Coalition for Green Capital website: <http://coalitionforgreencapital.com/whats-a-green-bank-html/basic-green-bank-model/>

<sup>v</sup> Connecticut Green Bank. (2019). *Green Bank Impact Report (FY2012-2019)*. Retrieved from <https://ctgreenbank.com/wp-content/uploads/2019/10/FY12-FY19-CGB-Impact-website.pdf>

<sup>vi</sup> New York Green Bank. (2019). *NY Green Bank: Metrics, Reporting & Evaluation* (Quarterly Report No. 19).

<sup>vii</sup> National Low Income Housing Coalition. (2019). *South Dakota*. Retrieved from <https://reports.nlihc.org/oor/south-dakota>

<sup>viii</sup> Energy-Related Carbon Dioxide Emissions by State, 2005-2016 (Table 2). (2019). Retrieved November 29, 2019, from U.S. Energy Information Administration (EIA) website: <https://www.eia.gov/environment/emissions/state/analysis/>