The Resistance Dilemma

Place-Based Movements and the Climate Crisis

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10 How Resistance to Renewable Energy Infrastructure Might Frustrate Climate Solutions

Large hydroelectric dams have significant environmental impacts by their very nature, and it is not surprising that a dam like Site C would attract considerable opposition from environmental groups. The resistance challenge is not confined to large dams. Many other types of renewable energy generation and transmission facilities have confronted determined opposition from local groups. Solar and wind power projects, vital to replacing fossil fuels for electricity generation, have generated controversy from local groups concerned about property values, changes to species habitats, landscapes, aesthetics, and human health. New high-voltage electric transmission lines have also attracted significant resistance. Renewable energy projects are frequently in quite different locations than fossil fuel infrastructure, so new transmission lines are usually required to supplement the buildout of new renewable energy sources. In addition, the integration of intermittent renewables into the electricity grid is projected to require significant new transmission capacity and deeper integration across larger geographical areas.

Chapter 9 reviewed the analytical framework in light of the differences between fossil fuel and renewable energy projects. This chapter continues the investigation into this book's second question: does the decision to ally so closely with place-based opponents risk creating a "resistance dilemma" by legitimizing place-based resistance that can then be mobilized to thwart needed clean energy infrastructure? It does so by examining a broader range of cases of resistance to renewable energy. After a brief overview of the literature on the social acceptance of renewables, the chapter will address, in turn, conflicts over wind power projects in central Canada and New England, solar power projects in California, and transmission line projects within California and between Quebec and New England states.

Most of this analysis will be based on a review of published literature and government documents. This chapter examines what motivated resistance campaigns and how much impact they have had in thwarting or altering proposed renewable power infrastructure projects.

The purpose of highlighting this resistance dilemma is not to question the legitimacy, sincerity, or efficacy of place-based resistance. Nor is it to cast blame on the climate movement or challenge the wisdom or merits of its place-based resistance to fossil fuel infrastructure. Place-based resistance has a long tradition predating its adoption by climate activists, and place-based resistance to renewable energy infrastructure—be it against large dams or rural area wind farms—was a widely used strategy before Bill McKibben discovered the Keystone XL pipeline. Rather, the reason to highlight the resistance dilemma is because there is an urgent need to build massive amounts of clean and renewable energy infrastructure, and our institutions have historically not been effective at resolving the tensions between local desires to minimize impacts and the broader public interest in establishing needed infrastructure. In short, we have a process legitimacy crisis, and we need to address that in order to effectively address the climate crisis.

Literature on Social Acceptance of Renewables

Widespread resistance has spawned a substantial body of literature on the social acceptance of renewable energy (e.g., Wustenhagen, Wolsink, and Bürer 2007; Cleland et al. 2016; Batel et al. 2013; Devine-Wright 2009; Fast 2013). One pervasive theme is the importance of local values. Most scholars writing in the field reject the "not in my backyard" (NIMBY) framing of place-based opposition, insisting instead on the imperative of respecting the attachment of people to place (Devine-Wright, Devine-Wright, and Cowell 2016; Fast et al. 2016; Sovacool and Ratan 2012; Hyland and Bertsch 2018). One systematic review of the literature concludes that "local communities may be more willing to accept projects if developers site and design them in ways that work with, rather than against, local identities and people's attachment to specific places" (Devine-Wright, Devine-Wright, and Cowell 2016, 5). In addition, there is a significant amount of evidence that project resistance can be effective, either by contributing to the demise of undesirable projects or by leading to concrete project improvements that address the concerns of local critics (Hager and Haddad 2015).

Another virtually universal theme throughout the social acceptance literature is an emphasis on engaging host communities meaningfully and early in the process and demonstrating how community input influenced project design (Devine-Wright, Devine-Wright, and Cowell 2016; Fast et al. 2016). Failure to do so frequently leads to "public enquiry, prolonged planning delays, additional expense, and local community distrust in network organisations" (Cotton and Devine-Wright 2012). Cotton and Devine-Wright (2013) argue that "stronger collaborative or partnership planning approaches, devolved power arrangements and stronger local community scrutiny of developer applications are justified, both on ethical grounds to support procedural justice, and on strategic grounds to ameliorate public opposition and the risk of planning failure."

A third theme in the social acceptance of renewables literature is the importance of providing economic benefits to those affected by the project. Some studies emphasize the importance of community ownership or shared ownership in fostering public acceptance (Cleland et al. 2016; Devine-Wright, Devine-Wright, and Cowell 2016). Others find that local economic benefits are more important than actual ownership per se (Hyland and Bertsch 2018). Regardless, there is a general consensus that some form of substantial community benefit is essential. All three of these themes are apparent in the following case studies of resistance to renewable energy infrastructure.

The fact that there is significant literature about local resistance to new renewable energy infrastructure does not mean that all, or even most, new projects face resistance. Recent work by Giordano et al. (2018) uses an effective research design that moves beyond the opinion surveys or small-number case studies that have dominated the literature. Their study examined 53 proposed wind projects in the United States and "found evidence of at least one type of opposition mobilization activity in 43 of the 53 proposals (81%), suggesting that some oppositional activity was fairly common among proposed wind projects in the selected states. However, only 19 of the 53 proposals (36%) experienced three or more types of opposition mobilization activities (thus scoring in the set of opposed cases by our measure), suggesting that more involved opposition efforts were rarer" (Giordano et al. 2018, 126).

They categorize resistance to wind project proposals as "on the whole, relatively moderate." They also emphasize that resistance activities increase when more levels of government are involved, because they increase access points for project opponents (Giordano et al. 2018, 129).

All these themes are consistent with the analytical framework presented in chapter 1 and applied thus far to the five large projects. The projects most likely to attract strong opposition are those with salient place-based risks and few or no economic benefits to those same communities. The greater the local benefits, the easier it is for projects to overcome concerns about local impacts. Opposition is more formidable when it has access to multiple veto points. The remainder of this chapter examines six cases of renewable energy resistance in Canada and the United States.

Conflicts over Wind Power in Ontario

Ontario Decarbonization Policy

In Canada, the most significant resistance to renewable energy infrastructure has been to wind power in Ontario. Beginning in 2004, the government of Ontario, controlled by the Ontario Liberal Party under Premier Dalton McGuinty, undertook a bold decarbonization initiative to phase out coal-fired electricity generation, which in that year made up about one-fifth of the province's electricity supply. To diversify its low-carbon supply mix, Ontario initiated a feed-in tariff program in 2006, offering a guaranteed price for hydro, wind, solar, and biomass facilities for a 20-year contract. The province became more ambitious in 2009, when the McGuinty government enacted the Green Energy and Green Economy Act (hereafter the Green Energy Act).

The Green Energy Act expanded the feed-in tariff program. In addition to increasing the subsidized rates, the Green Energy Act made a number of other changes designed to reduce barriers to rapid development of renewable energy. Local transmission companies were required to connect renewable projects to the grid and grant them priority access (Fast et al. 2016; Loudermilk 2016).[1] In order to expedite approvals and installation, the renewable energy approval process was created with the goal of having decisions within six months of project submission. Approved projects would be entitled to certain exemptions from the permit requirements under the Environmental Protection Act and Ontario Water Resources Act. Modest community consultation requirements were also included (Walker 2010).

Most controversially, the province also amended the Planning Act to remove direct control over land-use decisions from municipal governments (Fast and Mabee 2015; Fast et al. 2016). In a speech to the London Chamber of Commerce, Premier McGuinty justified the change as necessary to avoid

the "not-in-my-backyard" syndrome thwarting development of renewable energy, saying:

> We're going to find a way through this new legislation to make it perfectly clear that NIMBYism will no longer prevail when it comes to putting up wind turbines, solar panels and bio-fuel plants. . . . Our new law will uphold rigorous safety and environmental standards, but once those standards have been met, we intend to assert the greater public interest in clean, green electricity and the jobs that come with it. Municipalities will no longer be able to reject wind turbines, solar panels or bio-fuel plants because they don't like them. We can't allow interests to oppose these simply because they don't like them. (CBC 2009)

At the time, these changes were enormously popular with the public. A poll shortly before the Green Energy Act was enacted showed 87% of respondents approved of the proposed act. Support was high even where resistance to wind power had been reported as a result of projects proposed under the 2006 policy (CNW 2009).

The Rise of Resistance to Wind Power

As communities learned about proposed wind projects, however, "a fierce and well-organized backlash" emerged (Mulvihill, Winfield, and Etcheverry 2013, 10). Not all rural residents in areas where projects were proposed were opposed to them. Many residents were either neutral toward the projects or supportive, seeing their "green" development attributes as consistent with their rural lifestyle and promoting their livelihoods (Fast, Mabee, and Blair 2015). But intense, organized, and vocal opposition also emerged. By 2011, local wind resistance groups had emerged in every provincial electoral district with a wind turbine (Stokes 2013). Wind Concerns Ontario was created as a coalition of community groups, and by 2011 it had 50 local chapters (Stokes 2013). The groups were successful at mobilizing municipal politicians. By 2011, 78 municipalities had passed resolutions against wind turbines (Stokes 2016).

Opposition resulted from a combination of concerns. One significant trigger was visual and cultural: to many in rural areas, wind turbines reflected an industrialization of the landscape that was anathema to their sense of place (Fast and Mabee 2015). Second, there were also more pecuniary concerns about property values. A 2013–2014 study found a significant reduction in housing prices within 5 kilometers of turbine sites in two communities with turbines along Lake Ontario, but interestingly not for those within

1 kilometer. Properties closer to the turbines may have lease agreements with developers, so they would benefit financially in a way that more distant properties would not (Fast, Mabee, and Blair 2015; Christidis and Law 2012).

Third, human health concerns have been one of the biggest issues in the Ontario conflict. "Wind turbine syndrome," as it came to be called, emerged as nearby residents reported concerns with sleep interruption, headaches, fatigue, dizziness, ear irritation, concentration problems, and irritability. Wind opponents argued that these impacts were the result of a combination of mild noise (a whirring sound from turbine blade movements), vibrations, and visual light flickering based on sun position and shadow effects. Health criticisms have persisted despite the absence of any credible evidence linking proximity to wind turbines with any physical ailments (Christidis and Law 2012; Knopper and Ollson 2011). In 2010, the Ontario Chief Medical Officer of Health published a comprehensive review of the evidence. The report reinforced that no known links exist between wind turbine noise and sleep issues, dizziness, or headaches but did acknowledge that residents may find it annoying. The report stated that improved community engagement may alleviate concerns about proposed wind turbine projects and that community attitudes and perceptions are related to perceived levels of annoyance (Ontario Chief Medical Officer of Health 2010; Fast et al. 2016).

While concerns over visual impacts, property values, and wind turbine syndrome have dominated Ontario wind resistance discourses, various scholars have emphasized how the institutional arrangement around wind power contributes to the resistance, both directly by creating a backlash against those who feel excluded and indirectly in how alienation and annoyance contribute to perceived health impacts or a more general reduction in well-being. The two most consequential features contributing to resistance are the stripping of planning authority from local governments and the dearth of community-owned projects (Fast et al. 2016; Mulvihill, Winfield, and Etcheverry 2013; Walker and Baxter 2017). Wind Concerns Ontario denounced the accelerated approval process for "tearing apart the fabric of rural Ontario" (Stokes 2013, 495). Chapter 11 will address these and other contributors to social acceptability of renewable energy technologies.

The resistance movement was effective at mobilizing for the 2011 provincial election, in which wind turbines became a highly contested issue. Despite the quality of the wind resource, proposals for offshore turbines in the Great Lakes were met with vehement resistance. In advance of the

election, the governing Liberals placed a moratorium on offshore siting of wind turbines (Mulvillhill, Winfield, and Etcheverry 2013). Premier Dalton McGuinty's governing Liberal Party lost nearly all their rural seats and lost their majority, but remained in power with a minority government. Stokes (2016) estimated that the opposition to wind power cost the governing Liberals between 4% and 10% of the vote from residents living within 3 kilometers of a proposed or operational wind turbine. In the 2014 provincial election, the Liberals, by then led by Kathleen Wynne, succeeded in recovering their majority by winning an additional 10 seats.

Policy Revisions

In moving forward with feed-in- tariff contracts after 2011, the government attempted to remedy issues with wind turbine resistance by prioritizing projects with a clear demonstration of community backing via municipal council resolutions. This, however, turned out to work against the initiative, as nearly a quarter of the province's municipalities, 89 in total, passed resolutions stating that they were "unwilling hosts." The provincial government ended the feed-in tariff program for projects over 500 kilowatts in 2013 amid widespread criticism (Fast et al. 2016).

During its existence from 2009 to 2013, the feed-in tariff program resulted in 61 contracts for large (>500 kilowatts) wind facilities, creating 3,100 megawatts of capacity (Fast et al. 2016). Ownership was skewed toward large, foreign-owned wind energy companies. According to Fast et al. (2016), "there is only one feed-in tariff project with cooperative ownership and several with partial aboriginal ownership, despite the existence of incentives for cooperative and aboriginal-owned projects."

In 2015, the provincial government introduced a new program for wind development, this time through a competitive bid process rather than a feed-in tariff. This system lent preference to bids that clearly demonstrated prearranged positive commitment from local governments and at least 75% of local landowners in signed agreements (Fast et al. 2016).

Estimated Impact of Resistance

There is no comprehensive analysis examining the impact of wind resistance on project cancellations, delays, or costs. One indicator of community resistance can be found in both appeals of permitting decisions and political mobilization. According to Fast (2016), up to the time of his study,

of the 29 wind projects approved, 26 of them had been appealed to the Environmental Review Tribunal. While only one of the appeals led to the project being canceled, the other appeals resulted in delays to the projects.

One revealing study examined the impact of the process reforms on project timing. Part of the Green Energy Act's express purpose was to facilitate project development by streamlining review processes and by taking authority away from local governments, avoiding local resistance that could lead to project delays and cancellations. A study by Margaret Loudermilk shows that process reforms do not seem to have worked as intended. Despite all the measures to facilitate project approval, the time elapsed between project application and operation was no faster after the reforms than before (Loudermilk 2017). The study does not explicitly examine how much community opposition contributed to the failure of the process reforms to expedite project development.

Despite the explicit intent of preventing place-based resistance from thwarting development of renewable energy projects, the decision to take approval authority away from local government seems to have had the exact opposite effect: increasing local resistance to wind turbines. According to Fast and Mabee (2015, 9), "removing local planning authority over wind projects has had the most negative repercussions" for community support for project development.

Despite this resistance, Ontario has made enormous strides in decarbonizing its electricity sector since it began phasing out coal. In 2005, coal made up 21% of capacity and 19% of energy generation. It was completely phased out in 2014 (IISD 2015). Wind made up less than 0.1% of capacity in 2005 and had grown to 12% of installed capacity and 8% of electrical energy generation by 2016 (National Energy Board 2017e, 20). As of December 2017, Ontario had 94 wind installations with a total of 2,515 turbines, for a total installed capacity of 4,900 megawatts (Canadian Wind Energy Association, n.d.). Electricity-sector greenhouse gas emissions declined from 32 million tonnes in 2005 to 4 million tonnes in 2017, a remarkable 88% reduction (Government of Ontario, n.d.).

Election-Induced Policy Reversal

In June 2018, a Conservative majority government was elected, making Doug Ford Ontario's premier. Climate policy and renewable energy were among the salient issues in the campaign. Ford has been quite hostile to

Table 10.1
Issue ranking and party advantage, Ontario 2018 election

Issue	Percentage of Ontarians ranking issue in top three	Which party is best at dealing with the issue? Party and percentage advantage (second-closest party)
Health care	54%	NDP +11% (Liberals)
Economy and jobs	36%	Conservatives +19% (NDP)
Lower taxes	29%	Conservatives +35% (NDP)
Lower energy costs	28%	Conservatives +19% (NDP)
Debt repayment, balanced budget	19%	Conservatives +36% (NDP)

Source: IPSOS (2018a).

the green energy agenda. His election platform directly linked the Green Energy Act to higher electricity prices (referred to as "hydro" in much of Canada), saying, "For too long, well-connected insiders have been getting rich off your hydro bills. The Green Energy Act alone represents Ontario's largest-ever wealth transfer from the poor and middle class to the rich" (Ontario Progressive Conservatives 2018). As table 10.1 shows, energy costs were a significant issue in the campaign, ranking fourth among issues in a preelection poll, with 28% of respondents saying energy costs were among the top three election issues. Of those who believed energy costs were a significant issue, Ford's party had a 19% advantage over the second-place NDP and a 38% advantage over the governing Liberal Party (IPSOS 2018a). A poll taken later that month found that 61% of respondents said high electricity prices would affect their vote, and among those the Conservatives had a modest advantage over the NDP and a large advantage over the Liberals (IPSOS 2018b). Ford's first act after becoming premier was to dismantle the province's cap and trade program. Several days later, he canceled 759 renewable energy contracts that were in the works.

Offshore Wind in New England

The Cape Wind Project was a proposed offshore wind farm of 130 wind turbines in the Horseshoe Shoal region of Nantucket Sound, off Cape Cod, Massachusetts, in the United States. The project, which would be the first

offshore wind facility, was proposed by Cape Wind Associates, LLC, and developed by Jim Gordon in 2001 as part of the US offshore wind power development plan intended to generate 1,500 gigawatt-hours of electricity per year. The project was expected to generate a maximum electricity capacity of 468 megawatts, with an average output of 174 megawatts (BOEM, n.d.).

In November 2001, Cape Wind Associates filed a permit application for the wind farm with the Army Corps of Engineers, the federal agency regulating offshore wind power projects. In 2005, regulatory authority over offshore wind energy projects was delegated to the Bureau of Ocean Energy Management (BOEM) in the Department of the Interior. Because of these changes in the regulatory authority, the Cape Wind Project suffered a setback in completing its environmental impact statement, which was finally published in January 2009. In October 2010, Cape Wind Associates signed its commercial offshore renewable energy lease after the Department of the Interior approved its issuance in April 2010.

However, the Cape Wind Project faced relentless opposition and protracted court challenges for over 10 years. In July 2016, the US Court of Appeals for the District of Columbia rejected the government approvals for the project on the basis that Cape Wind Associates had not been able to obtain "sufficient site-specific data on seafloor and subsurface harzards" (Cassell 2016). Eventually, the shifting regulatory hurdles and legal challenges resulted in the failure of the Cape Wind Project to meet its contract commitments to sell power to local utilities, the National Grid, and NSTAR,[2] and thus the project was terminated in December 2017 (Seelye 2017; BOEM, n.d.).

The following analysis consists of two parts. The first part examines what motivated the resistance campaign against the project, including aesthetic concerns, environmental impacts, and decreased values of shorefront estates. The second part discusses the demise of the Cape Wind Project. Its slow death was caused by the initial absence of a regulatory framework for offshore renewable energy projects and strategic use of the American court system by the small but well-funded and highly effective opposition, the Alliance to Protect Nantucket Sound.

What Had Motivated the Resistance Campaign?

First, the resistance campaign was led by the Alliance to Protect Nantucket Sound, a nonprofit environmental organization established in 2002 in response to the proposed Cape Wind Project and dedicated to preserving

Nantucket Sound as a protected area. The opposition also included Public Employees for Environmental Responsibility, the Cape Cod Chamber of Commerce, which successfully galvanized support from local businesses, the Humane Society, and Barnstable Land Trust, which were powerful local conservation organizations (Watson and Courtney 2004). The proposed location of the project had ushered in aesthetic and cultural concerns.

Project opponents were concerned that the 130 wind turbines would jeopardize the tourism value of the region and turn Nantucket Sound into an "industrialized" site (Watson and Courtney 2004; Ejima et al. 2015). Walter Cronkite, the late legendary broadcaster, denounced the project by proclaiming, "Our national treasures should be off limits to industrialization" (Burkett 2003). The resistance campaign also gained support from the Wampanoag Tribe of Gay Head (Aquinnah). The Aquinnah claimed that Nantucket Sound should be protected as a sacred area because their ancestors once lived on land that is now covered by the waters of Nantucket Sound (Love 2014). On July 6, 2011, they filed a lawsuit against the federal government, given that Secretary of the Interior Kenneth Salazar had issued the federal approval of the project in April 2010 (Toensing 2011; *Town of Barnstable, Massachusetts et al. v. Ann G. Berwick et al*. 2014).

Second, because the Cape Wind Project was the first offshore wind farm in the United States, the opposition raised concerns about navigation and potential environmental impacts to marine life, migratory birds, and especially seafloor and subsurface hazards (Ejima et al. 2015; Cassell 2016). The opposition expressed these environmental concerns through the Bureau of Ocean Energy Management within the Department of the Interior, which was the regulatory authority of the project, at a US district court in March 2014. Despite the dismissal of the case by the district court in November 2014, the Alliance was successful at the court of appeals in further delaying the Cape Wind Project because the BOEM was required to undertake adequate geological surveys before any construction could begin (Cassell 2016).

Third, the Alliance's relentless resistance campaign had a strong economic motive because of concerns over the potential decrease in value of shorefront estates of wealthy families. These properties were owned by the Kennedys, billionaire William Koch, former secretary of state John Kerry, and former governor Mitt Romney, so it was not surprising that they were the most adamant opponents of the project (Seelye 2017; Eckhouse and Ryan 2017). In his *New York Times* op-ed in 2005, Robert F. Kennedy, Jr.,

stated, "I do believe that some places should be off limits to any sort of industrial development. I wouldn't build a wind farm in Yosemite National Park. Nor would I build one on Nantucket Sound" (Kennedy 2005). The Alliance had raised approximately $40 million, of which William Koch was known to have donated $1.5 million (Seelye 2017). The huge donation allowed the Alliance to constantly challenge the Cape Wind Project in court, thereby making the permitting process costly and exhaustive for Cape Wind Associates and Jim Gordon.

Impacts of the Resistance Campaign in Thwarting the Cape Wind Project

The eventual demise of the Cape Wind Project was caused by the prolonged court battle waged by the highly effective and well-funded Alliance. However, the absence of an established framework for reviewing offshore renewable energy projects created regulatory hurdles, thereby allowing the opposition to take advantage of the hurdles and exacerbating the legal burdens on project proponent Cape Wind Associates.

When Cape Wind Associates proposed the wind power facility in November 2001, the US Army Corps of Engineers was the regulatory body responsible for granting the permit. It took the Corps of Engineers three years to publish a draft of the environmental impact statement (EIS) for the construction (BOEM, n.d.). Then, the Energy Policy Act of 2005 changed the regulatory authority from the Corps of Engineers to the BOEM. Similar to the procedure under the Corps of Engineers, the processing of the EIS could not be achieved any faster under the authority of the BOEM: the draft and final EIS versions were published in January 2008 and January 2009, respectively (BOEM, n.d.).

The BOEM was also criticized by the opposition for not conducting adequate geophysical and geotechnical surveys to gather data about the seafloor, resulting in a violation of its obligations under the National Environmental Policy Act (NEPA). Although the insufficient conduct of geological surveys could be attributed to the BOEM's lack of experience in handling offshore energy projects, it provided ammunition to the opposition to challenge the BOEM in court, further delaying the construction of the wind farm. Hence, the lack of a regulatory framework led to the protracted permitting procedures by both the Corps of Engineers and BOEM and the inadequate handling of obligations under the NEPA by the BOEM.

Lastly, the 130 wind turbines, which were to be located more than three miles from shore and required new infrastructure, including roads and

transmission lines, were subject to regulation by federal, state, and local jurisdictions (Zeller 2013). This allowed constant litigation against the Cape Wind Project at every level. From 2001 to 2014, the opposition had challenged the project in court, notably against the Army Corps of Engineers, the BOEM, and the Massachusetts Energy Facilities Siting Board, for the approval of two undersea transmission cables from the proposed facility to the regional power grid and against the Department of Public Utilities (DPU) over the above-market power purchase agreements between Cape Wind Associates and its two partners (*Town of Barnstable, Massachusetts, et al. v. Ann G. Berwick, et al*. 2014).

The Cape Wind Project enjoyed enormous support from major environmental groups, including the Sierra Club, the Natural Resources Defense Council, and Greenpeace (Zeller 2017). More importantly, the project received approvals at all federal, state, and local levels. Nonetheless, it faced fierce opposition from the highly effective and well-funded Alliance and other groups. The protracted, costly, and exhaustive court battles led to the failure of Cape Wind Associates to meet its contract commitments by December 31, 2014. Given the cancellation of contracts by the National Grid and NSTAR, the Cape Wind Project was no longer financially feasible and had to be abandoned in December 2017.

Solar Controversies in California

In 2008, California's Renewables Portfolio Standard was strengthened to require 33% of the state's retail electricity to come from renewable sources by 2020 (Hunold and Leitner 2011; Cain and Nelson 2013). In 2015, it was further strengthened to require 50% renewable power by 2030. This policy has led to the development of large-scale renewable energy projects, including solar projects made possible by opening up public lands in remote areas of the Mojave Desert. This "Solar Renaissance" (Hunold and Leitner 2011) exposed the trade-off between the protection of wildlife and renewable energy development to reduce the threats of climate change. The following analysis focuses on two major solar energy projects of the "Solar Renaissance" era, the Ivanpah Solar Electric Generating System and Soda Mountain Solar Project.

Ivanpah Solar Electric Generating System

Located in the Mojave Desert, the Ivanpah Solar Electric Generating System is a 377-megawatt concentrated solar power facility built on 3,400 acres of

public land near the California-Nevada border (Moore and Hackett 2016; BrightSource Energy, n.d.). The $2.2 billion project was developed by BrightSource Energy, NRG Energy, and Google. In April 2011, BrightSource Energy received a $1.6 billion loan guarantee from the Department of Energy (Garthwaite 2013; Wiener-Bronner 2014). The facility consists of three separate heliostat fields with more than 170,000 12-foot heliostats and three 450-foot power towers (Metcalfe 2016; Danelski 2017). The Ivanpah solar project was the top priority of the Obama administration's push to reduce America's carbon footprint and move toward a green energy economy.

When BrightSource Energy proposed the project to the California Energy Commission in October 2007, the initial design included a 400-megawatt plant to be constructed on 3,400 acres of land and having 272,000 heliostats arranged in 10 circular fields, each with a central power tower (Moore and Hackett 2016). After redesigning the facility four times, the California Energy Commission granted the siting permit to the current version. The draft environmental impact statement was published in late 2009, and the California Energy Commission held public hearings in early 2010 (Moore and Hackett 2016).

In October 2010, the California Energy Commission approved the project, and construction was completed in 2013 (Moore and Hackett 2016). The facility officially opened on February 13, 2014, and it was the largest concentrated solar power station in the world. The Ivanpah plant has been in operation since its inauguration in 2014.

Soda Mountain Solar Project

The Soda Mountain Solar Project is a proposed 287-megawatt solar photovoltaic power facility built on 1,767 acres of public land along Interstate 15 and less than a mile from the Mojave National Preserve in San Bernardino County, California (Steinberg 2016; Press-Enterprise 2016). The project, which would provide power to more than 86,000 homes, was part of the Obama administration's Climate Action Plan to develop 20,000 megawatts of renewable energy on public lands by 2020 (Steinberg 2016; Press-Enterprise 2016). In June 2015, the city of Los Angeles decided not to purchase electricity from the Soda Mountain Solar Project, delivering a blow to the project's former developer, Bechtel Corporation (Sahagun 2015). In March 2016, the project received approval from the US Department of the Interior (Press-Enterprise 2016).

On August 23, 2016, however, the Soda Mountain Solar Project was unable to obtain final approval from San Bernardino County to start construction activities (Sahagun 2016a). By a 3–2 vote, the county board of supervisors declined to authorize a county permit, with Vice Chairman Robert Lovingood saying, "We endorse renewable energy, but this was the wrong project in the wrong location" (Sahagun 2016a). By this time, Regenerate Power had bought the project from Bechtel Corporation. After the rejection from San Bernardino County, Regenerate Power was determined to overcome the final hurdle and push the project forward (Steinberg 2016). Nevertheless, construction has not been initiated at the time of writing.

Motivations for Resistance

As both the Ivanpah and Soda Mountain solar projects are in close proximity to the Mojave Wilderness, the primary motivation for resistance to the siting of the two projects concerns impacts on wildlife species such as desert tortoise, birds, and bighorn sheep in the Mojave National Preserve. In the case of the Ivanpah solar project, there were additional concerns about loss of a spiritual place and spots for recreational activities.

Desert tortoises have lived in the Ivanpah Valley region for millions of years and are listed as a threatened species under the Endangered Species Act (Kerlin 2018; Moore and Hackett 2016). The Ivanpah tortoises are considered a genetically distinct population, and the Ivanpah Valley region is an important habitat for the survival of the species (Moore and Hackett 2016). Furthermore, the desert tortoises are vulnerable to human development.

Desert conservationists and biologists opposed the siting because the project would encroach on tortoise habitat. Surveys found more than 150 tortoises near the proposed location for the facility (Garthwaite 2013). The Ivanpah project site was also a refuge for migratory birds traveling along the Pacific flyway (Sahagun 2016b). The intense radiation created by thousands of the heliostat mirrors has actually resulted in birds being burned alive while flying through the facility (Sahagun 2016b; Sweet 2015; San Bernardino Sun 2014). Estimates of the number of deaths per year varied greatly, ranging from a low of 1,000 by BrightSource Energy, to 3,500 in a *Wall Street Journal* report, to 6,000 by federal biologists, to a high of 28,000 by the environmental group Center for Biological Diversity (Sahagun 2016b; Sweet 2015; San Bernardino Sun 2014).

The majority of dead birds consisted of hummingbirds, warblers, doves, sparrows, and swallows. Plumes of smoke appeared as the birds were incinerated in midair, which led the birds to be given the name "streamers" (Sahagun 2016b). Because of the high number of bird deaths, federal wildlife experts referred to the Ivanpah project site as "a mega-trap" for wildlife species (San Bernardino Sun 2014). Major opponents of the siting of the Ivanpah solar project included the Sierra Club, which argued for the resiting of the power facility to a place that was not a habitat for the desert tortoise, and the National Parks Conservation Association, which stated that the proposed siting would "degrade the federally protected resources of Mojave National Preserve" (Moore and Hackett 2016).

In the case of the Soda Mountain Solar Project, opponents expressed similar environmental concerns over habitat for bighorn sheep, foxes, owls, and migratory birds. This underdeveloped Soda Mountain region was an important habitat for the bighorn sheep, but they were separated between North Soda Mountain and South Soda Mountain by Interstate 15 (Sahagun 2016a; Steinberg 2016; Press-Enterprise 2016). As the bighorn sheep population had experienced strong growth in recent years, biologists proposed to restore migration corridors to avoid having the species become genetically isolated (Sahagun 2016a; Steinberg 2016; Press-Enterprise 2016). The proposed power facility would undermine the effort to reestablish the key migration routes and thus have inadvertent impacts on the growth of the bighorn sheep.

In addition to its value as a wildlife habitat, the Ivanpah Valley was a spiritual place for several Native American tribes in the region. A prayer site and an altar were on the hill above the project site (Moore and Hackett 2016). Also, the Native American tribes believed that the spiritual powers originated in the absence of human development in the area (Moore and Hackett 2016). Hence, the siting of the project triggered relentless resistance from the Native American peoples. They organized a 14-mile relay run, the Ivanpah Spirit Run, and turned it into an online documentary, *Solar Gold*, by Robert Lundahl (Moore and Hackett 2016).

Furthermore, opponents claimed that the Ivanpah Valley region was a treasured place for hiking, camping, and bird watching. An activist said, "This is big energy taking public lands that we own" (Moore and Hackett 2016). Indeed, the message that reverberated throughout the resistance campaigns was that the project demonstrated the "privatization of public wildlands . . . by transforming multiuse places into single-use industrial

zones" (Moore and Hackett 2016). Activists held two protest hikes, in 2008 and 2010, to uphold the right of the public to hike and camp on the Ivanpah land (Moore and Hackett 2016).

Impacts of the Resistance Campaigns

Despite the resistance campaigns, construction of the Ivanpah Solar Electric Generating System was eventually completed, and it began operating in 2013. The Ivanpah project received multiple awards, such as the Concentrated Solar Power Project of the Year by Solar Power Generation USA in February 2012 and the Plant of the Year by *Power Magazine* in August 2014 (Overton 2014; Wind Energy and Electric Vehicle Review 2012).

While the strong resistance of opponents was not able to stop the project, it did result in several significant changes. First, the developers had to scale back from the original 400-megawatt design to the current 377-megawatt version to reduce the disturbance to desert tortoise habitat. Second, the Bureau of Land Management (BLM) ordered a temporary suspension of construction in April 2011 to gauge the impacts on the desert tortoises (California Desert District, Bureau of Land Management 2011). In June 2011, the BLM lifted the suspension order as the US Fish and Wildlife Service "found the project [was] not likely to jeopardize the endangered desert tortoise" (Bureau of Land Management 2011). Third, BrightSource Energy has spent more than $56 million on mitigation efforts for desert tortoises, including the care program for juvenile tortoises, providing the nurseries, and relocation programs (Wiener-Bronner 2014; BrightSource Energy, n.d.). Without the relentless pressure from the environmentalists, desert conservationists, and biologists, such mitigation efforts might not have been implemented.

Unlike the Ivanpah Solar Electric Generating System, the Soda Mountain Solar Project has not been able to overcome the resistance. The strong opposition campaigns led to the cancelation of power purchase plans by its major customer, the city of Los Angeles, in June 2015. The Sierra Club was strongly in favor of the city's decision, saying, "The Sierra Club is delighted to see the city do the right thing and choose not to sign a power purchase agreement with this harmful project" (Sahagun 2015). In addition, project opponents had successfully lobbied the San Bernardino County Board of Supervisors to rule against the project by not granting the final permit that the developer needed to proceed with construction. The project has been halted until now.

Both projects experienced the relentless resistance campaigns during the siting process because of the negative impacts on wildlife in the Mojave Desert, but the outcomes were different. Two factors may explain the failure of the Soda Mountain Solar Project. First, the city of Los Angeles was expected to be the key customer to purchase electricity from the project. It turned out that the Los Angeles Department of Water and Power found other proposed renewable energy projects that would charge the city less for electricity. Second, although the project was in the federal plan to reduce the country's reliance on fossil fuels, it did not receive as strong support from the federal government as the Ivanpah solar project did. In addition, the Soda Mountain Solar Project experienced a change in the project developer, which may have complicated its ability to surmount opposition. In stark contrast, with assistance from the Obama administration, reinforced by its powerful developers, the Ivanpah solar project successfully overcame all the roadblocks to completing its construction phase.

Transmission Line Conflicts in California

The Tehachapi Renewable Transmission Project is a 173-mile transmission project developed by Southern California Edison to bring up to 4,500 megawatts of renewable energy (enough to supply three million homes) from wind farms in Kern County to substations in Los Angeles and San Bernardino Counties (Southern California Edison, n.d.a). The project, with an estimated cost of $2.1–$2.5 billion, was designed to contribute to California's renewable portfolio standard's requirement to obtain 33% of its energy from renewable sources by 2020 (Cain and Nelson 2013).

As part of Decision 09-12-044, granted in December 2009 by the California Public Utility Commission (CPUC), Southern California Edison received approval for the construction of a 3.5-mile segment of 500-kilovolt overhead transmission facilities, Segment 8A, through a residential area of Chino Hills (CPUC 2013). This segment triggered vehement opposition from residents of the city. In October 2011, the city of Chino Hills formally requested that the segment planned through their community be "undergrounded." In July 2013, the California Public Utility Commission granted the petition of Chino Hills and ordered the undergrounding of the 3.5-mile transmission line.

Motivations for Resistance

The resistance was motivated by concerns about visual disruption, decreased property values, and health and safety concerns. Opposition within Chino Hills resulted in the formation in 2007 of Hope for the Hills, a nonprofit grassroots organization of about 1,500 residents in Chino Hills established to raise awareness about their concerns over the Tehachapi Renewable Transmission Project. The 3.5-mile segment of overhead power lines would consist of transmission towers reaching 195–198 feet in height and occupying a 150-foot right-of-way (CPUC 2013). In comparison to other cities along the project's route, Segment 8A in Chino Hills had the narrowest right-of-way. Thus, the towers would be located very close to residential structures, exacerbating the visual impact of the transmission lines. Chino Hills had 200 residential structures affected by the narrow right-of-way, which was more than in the towns of Duarte (94) and Ontario (36) (CPUC 2013).

Hope for the Hills and the city of Chino Hills relentlessly advocated undergrounding the lines because of concerns that the proximity of the transmission towers could reduce homeowners' property values (Tasci 2013). Most importantly, Chino Hills had become part of the identity of residents, since they had grown attached to the city. Hence, the visual disruption by the tall towers would lead to a disruption of this sense of place and an impingement on the community's identity.

Hope for the Hills and the city of Chino Hills were concerned that the proximity of the lines would expose residents to electromagnetic radiation and therefore increased risk of cancer (Tasci 2013; Nisperos 2016). Although evidence for health risks from high-voltage transmission lines has not been proven definitively, the perceived health risks certainly intensified the community-based stigma toward Segment 8A. Another aspect of perceived risks in this case was the concern over earthquakes. Chino Hills is located in an earthquake-prone zone, so residents were worried about whether the tall structures could collapse in a disaster (Tasci 2013; Nisperos 2016). For instance, Garcia, a registered nurse who has lived in Chino Hills with his family since 1997, said, "We live in an earthquake zone. If a disaster strikes, that thing could fall right through my house" (Willon 2011).

Impacts of the Resistance Campaigns

Hope for the Hills had utilized protests, social media, and the internet to amplify the perceptions of risk in the community (Cain and Nelson 2013).

The city of Chino Hills was also an active opponent of the project, committing $4.7 million in legal fees to force Southern California Edison to put the power line underground. Although the California Supreme Court refused to hear the challenge against Southern California Edison, the two parties were successful in lobbying the California Public Utility Commission (Dombek 2011). On November 11, 2011, the California Public Utility Commission ordered that the utility halt the construction of Segment 8A and required it to submit alternatives for Segment 8A in response to an application for rehearing and motion for partial stay filed by the city of Chino Hills (CPUC 2011). On July 11, 2013, the CPUC ruled against Southern California Edison, voting 3–2 in favor of undergrounding Segment 8A in Chino Hills, though the lines remained above ground in other cities.

Cost estimates of undergrounding Segment 8A in Chino Hills ranged from $300 million to $800 million, compared to the cost estimate of $170 million to build the overhead transmission line (Dombek 2012; Southern California Edison, n.d.b). However, this seemed to be a better option than the alternative suggested by Hope for the Hills and the city of Chino Hills. The city had suggested an alternative route in which the transmission lines would run through the existing rights-of-way of Chino Hills State Park. This alternative would have required an amendment to the Land Use General Plan, which could have delayed construction for 8 to 15 months. In summer 2014, Southern California Edison began construction of the underground line in Chino Hills. The Tehachapi Renewable Transmission Project has been in operation since December 2016, though it was originally scheduled to be operational in 2015 (Tweed 2010).

The Northern Pass between Quebec and New England

The Northern Pass project is a proposed US$1.6 billion system of high-voltage transmission lines to bring 1,090 megawatts of Canadian hydropower produced by Hydro-Quebec to New Hampshire and the rest of New England (Northern Pass Transmission, n.d.; Pentland 2018). The project, developed by Eversource Energy (hereafter Eversource), comprises 192 miles of 80- to 135-foot towers and transmission lines running from the border town of Pittsburg, New Hampshire, where it would connect to the Quebec Hydro grid, and ending in Deerfield, New Hampshire, where it would connect to the grid of New England (Keir and Ali 2014; Tierney and Darling

2017). One-third of the proposed transmission lines would be underground lines, given that 80% of the facilities are on existing transmission rights-of-way or under public roadways (Tierney and Darling 2017).

The Northern Pass was expected to generate up to C$500 million in annual revenues for Hydro-Quebec (CBC 2018a). More importantly, the Northern Pass could help New England substantially reduce carbon emissions, by up to 3.2 million tons per year (Northern Pass Transmission, n.d.). In November 2017, Hydro-Quebec and Eversource received a presidential permit for the project from the US Department of Energy (US Department of Energy 2017). In January 2018, they continued to receive approval from Massachusetts for the Northern Pass by winning the biggest 20-year energy deal in the history of Quebec's public utility (CBC 2018a).

However, the project was rejected in February 2018 by New Hampshire's Site Evaluation Committee, which is the state's key permitting authority over the project (CBC 2018b; Pentland 2018). Eversource challenged the decision in court, but on July 19, 2019, the New Hampshire Supreme Court upheld the rejection. As a result, Eversource announced it was terminating the project (NHPR 2019). With Northern Pass rejected, Massachusetts decided to proceed with a revised plan, the New England Clean Energy Connect project, to import hydropower from Quebec through Maine. The project has been authorized to proceed and, absent legal challenges, construction was expected to begin in late fall of 2020 (New England Clean Energy Connect 2020).

The following analysis consists of two parts. The first part examines what has motivated the opposition to Northern Pass. The second part discusses the impacts of the resistance campaign over the Northern Pass, in which the key players include the Society for the Protection of New Hampshire Forests (the Forest Society), the Appalachian Mountain Club, and SOS Mont Hereford.

Motivations for the Resistance Campaign

The resistance campaign against the project was motivated by visual impacts, decreased property values, environmental impacts, and economic impacts. The project proposed to run through the tourism region of New Hampshire, the Great North Woods region (also known as the North Country), which is home to Franconia Notch State Park, Pawtuckaway State Park, the Appalachian National Scenic Trail, and White Mountain National Forest. The construction of thousands of new towers through the North Country

would obstruct the scenic landscapes in these natural tourist attractions, according to the visual impact analysis by the Appalachian Mountain Club (Difley 2011; Burbank 2012).

Opponents are concerned that the tower's visibility may reduce the attractiveness of the scenery and have detrimental impacts on tourism, which is the second-largest industry in New Hampshire (Tierney and Darling 2017; Difley 2011). Indeed, studies have found that the Northern Pass could lead to a 9% reduction in tourism-related spending, which translates to average annual losses of $13 million to the gross state product and approximately 200 jobs between 2020 and 2030 (Tierney and Darling 2017).

Project proponents have emphasized job creation and increased tax payments. Gary A. Long, president and chief operating officer of Public Service of New Hampshire, has stated that the Northern Pass would create an annual average of 1,200 jobs during the three-year construction period and an estimated $24.5 million in state, local, and county tax payments in New Hampshire (Long 2011).

On the other hand, opponents have highlighted the temporary nature of construction jobs and the export of economic profits from New Hampshire (Keir and Ali 2014). The State Energy Strategy of New Hampshire, published in 2014, has called for energy independence, increasing use of in-state renewable energy resources, and circulation of energy revenues within the state's economy (Tierney and Darling 2017). Hence, opponents have raised the concern that the benefits of the Northern Pass would be exported to large companies such as Hydro-Quebec and the project's developer, Eversource, based in Hartford, Connecticut, and Boston, Massachusetts, while New Hampshire would bear the most burden from the project but receive few benefits from it.

Although various studies have produced mixed evidence on whether transmission lines cause a decrease in property values, local residents in towns along the proposed route have strongly opposed the project (Evans-Brown 2014). The visual impact would undoubtedly reduce the attractiveness of properties located near the towers.

Concerns were also raised that the transmission facilities would cause forest fragmentation on the protected conservation lands owned by the Forest Society in New Hampshire. Since 1901, the Forest Society has had a mission of protecting the landscapes of New Hampshire and a goal of "[protecting] sustainably-managed forests to support our forest-based economy"

in the face of growing commercial development pressure (Forest Society, n.d.). Unsurprisingly, the Forest Society is the most relentless opponent of the Northern Pass, mobilizing its reputation and finances for its opposition campaign "Trees Not Towers: Bury Northern Pass" (Forest Society, n.d.).

The Northern Pass project has also faced strong opposition in Quebec, Canada. The transmission line of the Quebec portion would run through the conservation area of Hereford Mountain, part of the White Mountains of the Appalachians (Montreal Gazette 2017). The SOS Mont Hereford group, which is comprised of Nature Québec, Estrie Regional Environmental Council, and the Appalachian Corridor and Protected Natural Environments Network, has called on Hydro-Quebec to reconsider the route (Montreal Gazette 2017). Because of the location of the transmission facilities in the heavily forested regions, opponents have expressed concerns over the decline of biodiversity, including environmental degradation of wetlands and forests and disruption of wildlife habitat.

As with the Cape Wind Project, there is also an Indigenous resistance movement against the Northern Pass. Dams, reservoirs, and power stations of Hydro-Quebec that would produce the energy for New England are constructed on the traditional territory of the Pessamit Innu, a tribal nation in Quebec (Casey 2017). The Innus have opposed the project because of concerns that their salmon fishery and traditional hunting grounds could be affected (Casey 2017). Although the Innus voiced their opposition during the public hearing session of the Site Evaluation Committee in July 2017, the impact of the allegation on the Site Evaluation Committee's decision is unclear.

Impacts of the Resistance Campaign

The Forest Society and SOS Mont Hereford have called for all the power lines to be buried underground. Because of the high cost of burying all the lines, Eversource and Hydro-Quebec have only agreed to have 60 miles of underground lines (Northern Pass Transmission, n.d.). Because the two sides had uncompromising stances on the location of the transmission lines, the Forest Society was able to raise $850,000 to secure a 5,800-acre conservation easement on a property that would be on a potential route of the Northern Pass (Keir and Ali 2014; Forest Society, n.d.; State Impact New Hampshire, n.d.).

The opposition also resorted to personal criticism in the media. The Balsams Grand Resort Hotel, located in the northernmost part of New Hampshire,

has been under a redevelopment plan spearheaded by Les Otten, who has received a $2 million loan from the $200 million development fund managed by Eversource (Tracy 2016; Difley and Webb 2016). Otten has been denounced for his ties to Eversource and criticized for pressuring the North Country Chamber of Commerce to change its opposition to the project (Tracy 2016; Difley and Webb 2016). Although Otten has denied the allegation, the opposition's condemnation has put a stain on Eversource's reputation, further exacerbating the unpopularity of the Northern Pass in New Hampshire.

Because of the relentless opposition, the project and Eversource's appeal were rejected in February and May 2018, respectively, by the Site Evaluation Committee (Casey 2018; CBC 2018b). On October 12, 2018, the New Hampshire Supreme Court accepted the appeal of Eversource, which was expected to be heard in early 2019 (Concord Monitor 2018). Given the reputation and resources of the project's opponents, particularly the Forest Society, and disagreement over the underground transmission lines, the Northern Pass is expected to endure a protracted litigation process. The project is likely dead as a result of Massachusetts's March 2018 decision to cancel the Northern Pass project and instead pursue the competing Maine transmission line project of Avangrid (Chesto 2018; CBC 2018c).

Conclusion

The cases reviewed in this chapter clearly demonstrate that place-based resistance has the potential to frustrate the implementation of renewable energy infrastructure required for decarbonization. Not all, or even most, renewable energy projects attract opposition (Giordano et al. 2018), and even when they do, in many cases opposition can be surmounted. The record nevertheless contains a significant number of cases where place-based resistance has resulted in costly delays and/or project modifications, or, most dramatically, outright project cancellations. Table 10.2 provides a capsule overview of the cases presented here.

In the case of wind power in Ontario, place-based opposition led to a number of delays, modifications, and even cancellations of projects. The 2018 election resulted in a humiliating loss for the governing Liberal Party and a reversal of many of its climate and renewable energy policies. Place-based resistance did not play a direct role in the 2018 election results, but the extreme politicization of the province's energy and climate policies did

Table 10.2
Summary of renewable energy controversies

Project (jurisdiction)	Outcome
Ontario wind	Substantial opposition produced many costly delays and cancellations; program scrapped after 2018 election
Cape Wind Project (MA)	Canceled after protracted resistance campaign
Ivanpah Solar Electric Generating System (CA)	Operating—approved after modifications to address environmental concerns
Soda Mountain Solar Project (CA)	Canceled after protracted resistance campaign
Tehachapi Renewable Transmission Project (CA)	Operating—approved after opposition forced expensive "undergrounding" of critical segment
Northern Pass (NH)	Canceled after protracted resistance campaign

contribute to the election result. In the Cape Wind case off the Massachusetts coast, place-based resistance contributed directly to the project's cancellation.

The chapter also reviewed efforts to site two concentrated solar power projects in the Mojave Desert region of California. One of the projects has been blocked by environmental concerns about wildlife habitat. The other is under operation after some delay and redesign of the project to reduce habitat disturbance. The case of the California transmission line, proposed explicitly to connect new wind farms to load centers, was able to surmount opposition but only after delays and costly project modifications to place a segment through Chino Hills underground. The Northern Pass Transmission project, which would have helped New England reduce carbon emissions by importing hydropower from Quebec, has been canceled as a result of vehement place-based resistance.

These cases also reveal the importance of the four factors emphasized by the analytical framework. The salience of place-based, concentrated risks and benefits is apparent in all these cases, from treasured rural landscapes in Ontario; to desert tortoises, bighorn sheep, and migrating birds in the Mojave Desert; to cherished forested mountains in New Hampshire; and precious views of unspoiled Nantucket Sound. Impacts on special place-values play a critical role in all these cases. Projects that have been able to surmount place-based resistance have found ways to tailor the project to reduce the risk to treasured values sufficiently, as shown by the Ivanpah solar project and Tehachapi Renewable Transmission Project.

Opposition groups' access to institutional veto points is a very important element of the power of project opponents, but in complex ways. The multiple veto points of the American federal system were especially apparent in the Cape Wind and Northern Pass cases, where opposition groups seemed to try every venue possible to block the project, including courts and federal and state regulatory processes. In the Soda Mountain solar case in California, it was the San Bernardino County Board of Supervisors that rejected the project. In the Ontario wind case, in the early years of resistance, community groups also sought to use the zoning authority of local governments to block projects, but the provincial government stripped them of that authority. While that removed the capacity of local governments to thwart projects, it also decreased the sense of community empowerment, which has aggravated the degree of resistance. We will return to this dilemma shortly.

The more a project can take advantage of existing infrastructure, the less resistance it is likely to encounter. Power lines, for example, have a smaller marginal impact on a landscape if they can be sited in, or adjacent to, existing rights-of-way, but projects that have that advantage are by no means guaranteed to be successful. A very high fraction of the Northern Pass Transmission project would have taken advantage of existing infrastructure, but some portions could not—and those segments generated enough resistance to thwart the project.

The final factor is the geographical separation of risks and benefits. All these cases reveal the importance of this variable as well. While renewable energy creates greater potential to concentrate risks and benefits in the same location, it frequently does not. Rural communities' resistance to wind power in Ontario was so strong because the benefits of the development were typically far away. Transmission lines, pipelines for electrons, inherently impose impacts on the communities they pass through for the benefit of those at one or both ends of the line.

This chapter has demonstrated that like new fossil fuel infrastructure, renewable energy infrastructure has attracted significant place-based resistance, which has led to costly project delays or alterations and in some cases outright cancellation. Such resistance is not inevitable (Giordano et al. 2018) and can at times improve decision-making (Hager and Haddad 2015). But its prevalence and impact does constitute a risk to the transition to clean energy needed to avoid the worst effects of climate change. Renewable energy resistance is not a direct consequence of the movement to keep

fossil fuels in the ground. As noted earlier, the academic literature on the social acceptance of renewable energy emerged before the climate movement made the strategic pivot to blocking infrastructure. The resistance dilemma is that the "keep it in the ground" movement builds the institutional, social, and cultural muscles that strengthen the capacity of groups intent on resistance to renewable energy.

Perhaps the most significant component of this dilemma is whether local governments should be granted veto power. Local control has frequently been demanded by the "keep it in the ground" movement, whether grounded in Indigenous rights or the idea that "only communities grant permission." If such rights are granted, it gives local authorities—Indigenous or not—the capacity to veto projects determined to be in the interests of the broader geographic political jurisdiction. Yet, if that power is taken away, local groups resent the disempowerment, and that can strengthen resistance. The engagement literature sees hope in giving communities a say but engaging them in meaningful processes that help community members see the broader public interest being promoted by projects that have impacts on treasured local values. Giving local communities a real governance role risks resistance, but shutting them out probably results in a much greater chance of impactful project opposition.

Overcoming place-based resistance is critical to decarbonization. If governments around the world can't get projects sited and built because of local resistance, fundamental human needs will not be met. How can we avoid shackling this transition with a process legitimacy crisis? Fortunately, the literature on public engagement contains a wealth of insights into how to gain greater acceptance for contested infrastructure processes. Presented in chapter 11, that literature demonstrates the importance of deep and meaningful engagement with stakeholders in ways that governments have traditionally been quite reluctant to do.