INTRODUCTION

Beyond the Crabgrass Frontier

THE THREE-BEDROOM RANCHES AT GLENVIEW AND TENTH STREET HAD been carved out of a grapefruit orchard during the Korean War. Construction crews put them together, their developer remembered, "just like on an assembly line." The subdivision had been considered among the best on the market at that time. Potential buyers flocked to see the model home at the 1952 Phoenix home show, examining the GE ranges and Westinghouse refrigerators that came with the $7,400 purchase price. They stood before the Frigidaire air conditioners, a $1,500 option, feeling the cool of the refrigerated air on their skin. Buyers purchased all ninety homes even before the subdivision was complete.[1]

By the mid-1960s, most Phoenicians would have considered these old houses. In the intervening decade, the city's population grew more than 400 percent. New subdivisions sprung up seemingly overnight, placing new houses atop the cotton and cantaloupe fields that had once dominated the valley. While the appliances in the homes on Glenview and Tenth had aged and the lack of central air turned off many potential buyers, the homes retained their value. Builders continued to describe the area as a "prestige neighborhood."[2] It was close to parks, golf courses, and other outdoor activities. The houses had wonderful views of Camelback Mountain to the east and Squaw Peak to the north.[3] They lay only a short drive from the new aerospace and electronics plants clustered around Deer Valley Airport, and the houses filled with the families of engineers and junior executives working for Sperry Rand, Motorola, and other companies that had recently arrived in the Valley of the Sun.

A generation of scholarship has given us a vast number of stories about suburban houses similar to those at Glenview and Tenth Street. The burgeoning subdivisions of northern Phoenix demonstrate the powerful actions of the federal government to subsidize and underwrite postwar growth. They stand as evidence of the diligent efforts of the local "growth machine" to capture federal subsidy and locate it in place. Their nearly uniform racial character—among the 200,000 people living in northern Phoenix's subdivisions in 1960, only 83 were African American and fewer than 4,500 had "Spanish surnames"—shows the federal government's "possessive investment in whiteness."[4] The commercial strips and shopping malls developed nearby symbolize postwar consumer

culture in its affluence and its banality. The high-tech manufacturing plants of northern Phoenix represent the effects of the Cold War's "military Keynesianism." The setting of those plants amid subdivisions displays a vision of an "industrial garden" that would unite "smoke-free industries" with nearby residences. The subdivisions of north Phoenix were home to people whose identities as homeowner, taxpayer, and school parent reshaped postwar politics. They were the physical manifestation of both the dream of homeownership and the nightmare of sprawl: "Dream Homes by the Dozen," and "The BLOB That Ate Arizona." And nowhere do these stories about the forces of change that lay at the heart of postwar growth seem clearer than on the outer fringes of suburban space.[5]

The names scholars have used to describe these boundaries point to similarities in the stories they tell. Newly built homes sit on the "Metropolitan Frontier" or the "Crabgrass Frontier," or they are part of "Edge Cities," places where people experienced "Life on the New Frontier."[6] The low-density metropolises carved from the formerly agricultural and desert landscapes of the American West were "urban oases," in the words of one of their early historians, urban spaces radically different and separate from the barren lands that surrounded them.[7] These narratives of "sprawl," moving progressively outward from the metropolitan center, would likely seem familiar to the historian most centrally associated with the frontier. Frederick Jackson Turner, of course, famously described the western frontier as the key force of American history, a line of the "perennial rebirth" of American values and ideals. The arrival of the frontier represented the beginning of development, and therefore of history. It was the initial process in the creation of modern America. Opposite "civilization" was "savagery," a space without history or connection to the ongoing stories of civilization and progress, a space providing undeveloped ground to be transformed.[8] The stark line separating subdivision from farm or desert has functioned much the same way in metropolitan and suburban history. The arrival of the bulldozer represents the beginning of urban time. The crabgrass frontier represents the outer boundary of the wave and lies at the hither edge of "undeveloped" land—the meeting point not between savagery and civilization, but between the modern metropolis and the "undeveloped" periphery beyond.[9]

If we angle our line of sight slightly above the roofs at Glenview and Tenth, however, a new geography becomes visible. Carried atop wooden poles thirty feet high, a grid of electrical power lines paralleled the street grid below. From transformers attached to each pole, small distribution lines carrying 240 volts of electricity ran into the homes. It was such power lines that had inspired the geographer Henri Lefebvre in the early 1970s to imagine the modern home as "permeated in every direction by streams of energy which run in and out of it by every imaginable route."[10]

The power lines that entered the homes on Glenview and Tenth did not, however, run along every imaginable route. They followed a definite path. The 7.2 kilovolt lines carrying electricity to the houses led to a small substation six blocks away at Eighth Street and Ocotillo where the substation's maze of transformers and circuit breakers reduced the voltage of electricity entering the station at 34 kilovolts for distribution to local homes. The 34-kilovolt power line feeding the substation headed east. It cut north of Camelback Mountain, and then turned and ran almost due north. Passing the last subdivision, it proceeded through cotton fields in northern Scottsdale before terminating, like the numerous strings of 34-kilovolt lines that ran to other parts of Phoenix, at a larger substation named "Pinnacle Peak." There, local transmission lines received electricity carried by twin strings of 365-kilovolt extra-high voltage (EHV) lines, whose path led north.[11] Leaving the Salt River's alluvial basin, the lines cut northeast through the Tonto National Forest, following 120-foot-wide rights-of-way cut through dense stands of juniper, oak, and ponderosa pine.[12] As they headed north, the EHV lines climbed the 3,000 vertical feet of the Mogollon Rim and, after cresting the rim, arrived in a landscape far different from the suburban subdivisions and irrigated fields of Phoenix or the surprisingly green forests of central Arizona.

Most Americans in the mid-1960s knew the landscape of the Colorado Plateau, even though they didn't know it by that name. They had seen it in the spires of Monument Valley that formed the setting of *Stagecoach* and *My Darling Clementine*. They had witnessed it in their homes as the Marlboro Man ambled across their television screens. The EHV lines traveled, however, to a part of the Plateau rarely seen on film or television. A few miles north of Interstate 40, they passed over an unmarked border, entering the Navajo Nation.[13] They passed east of Window Rock, that nation's capital, and the small community of Burnham, where the power lines towered over Navajo hogans. Thirty miles past Burnham, they entered a small basin that local shepherds had once called "No Fat Valley" because its sparse vegetation made it a difficult location to sustain their flocks of sheep and goats.[14] Since the late 1950s, the valley had been transformed. Much of its land had disappeared under the waters of Morgan Lake, a 1,600-acre cooling reservoir. Just east of the lake, 200-foot-tall draglines operated by mixed crews of Navajo and Anglo workers removed topsoil and sandstone before blasters used dynamite to shatter the coal seams the dragline had revealed. Along a newly built road, trucks larger than the houses on Glendale and Tenth carried the coal a short distance away from Navajo Mine to a dense collection of pipes, conveyors, and boilers known as Four Corners Power Plant.[15]

Within Four Corners, unearthed coal was set afire and released fly ash, nitrogen, and sulfur dioxide, heavy metals, and carbon dioxide, all of

which traveled up the power plant's stacks and into the sky. Mercury and fly ash fell to earth relatively quickly, making their way into the arid soils and limited water of the Colorado Plateau, as well as the bodies of the people and animals that lived upon it. Nitrogen and sulfur dioxide stayed in the air longer, until they mixed with moisture and fell to the earth as rain significantly more acidic than normal. The plant's carbon dioxide remained aloft, mixing with similar emissions from the power plants and automobiles that burned fossil fuels in the region, nation, and world.

Utility officials labeled these emissions "byproducts": the unvalued, if inevitable, results of unleashing coal's energy. The product they valued was electricity. As burning coal heated boilers, water within turned to steam. Channeled upward, the steam struck turbine blades, spinning them at a controlled rate of sixty times per second. On the opposite end of the turbine, giant magnets rotated within coils of copper wire at the same speed. The opposed charges of the spinning magnets grabbed electrons in the copper wire, causing them to flow from atom to atom. These flowing electrons—electricity—left the plant via a step-up substation that fed twin strings of EHV power lines. Coursing through circuits at the speed of light, electricity zipped out of No Fat Valley, crossed the Colorado Plateau, traveled down the Mogollon Rim, and arrived into the homes at Glenview and Tenth.

In Phoenix, Four Corners' electricity powered a social order that the historian David Nye has called "high energy society."[16] Evidence of this society appeared in Phoenix's newspapers, where retailers, homebuilders, and public utilities boasted of the labor electrical appliances could save and the leisure they could produce. Advertisements urged husbands to buy their wives an "electric valentine," a vacuum, washer/dryer, or electric skillet that "will help her get more fun out of life by making her homemaking easier—and remind her of your thoughtfulness every day of the year." Wives were urged to take steps to ensure that their husbands would remember them. "HINT TO THE LADIES: If your husband hasn't seen this page, maybe you should prop it up in front of his coffee cup this morning."[17] High-energy society also defined the lifestyles reporters discovered when they traveled to Phoenix to investigate the "Big Boom in the Desert" and "The New Millionaires of Phoenix." As banker Herbert Leggett explained to a writer from the *Saturday Evening Post*, "I awaken in my air-conditioned home in the morning. I take a dip in my swimming pool. I dress and get into my air-conditioned automobile and drive to the air-conditioned garage in the basement of this building. I work in an air-conditioned office, eat in an air-conditioned restaurant and perhaps go to an air-conditioned theater."[18] No evidence of the electricity that powered Leggett's air-conditioned lifestyle existed in the pages of the *Saturday Evening Post*. Indeed, mention of electricity in literature explaining and pro-

moting Phoenix's growth is rare. Little exists beyond pledges by Phoenix's utilities "to provide adequate supplies of ENERGY—economically—to meet the future requirements of Arizona's dynamic progress."[19]

Electricity had not always gone unnoticed. Earlier in the twentieth century, Americans had gaped in wonder at its power. Standing before the electrical dynamo in the Great Hall of the Exposition Universelle in fin-de-siècle Paris, Henry Adams felt "his historical neck broken by the sudden irruption of forces totally new."[20] Adams likened the changes he foresaw in the dynamo as second only to the birth of Christ in their historical impact. Other Americans saw electricity as evidence of new human control over the natural world. Gazing at New York's illuminated skyline from the Brooklyn Bridge in 1910, Ezra Pound declared, "Here is our poetry, we have pulled down the stars to our will." Americans flocked to see illuminated midways at World's Fairs and to witness spotlights trained on natural wonders like Niagara Falls.[21] In the 1920s and 1930s, politicians and planners including Gifford Pinchot, Lewis Mumford, George Norris, and Rexford Tugwell had envisioned the proliferation of electrical networks throughout rural America leading to social modernization, economic equality, and an amelioration of the inequities of both rural and urban life.[22] And the beginning of electrical transmission from Boulder Dam to Los Angeles in 1936 drew one million Angelinos into the streets, the largest civic celebration since the armistice to cheer and dance in suddenly well-lit streets. By the 1960s, however, wonder had disappeared. Electricity and power lines had become second nature in Phoenix, an assumed and expected aspect of modern life. Appearing in Phoenix's homes, businesses, and factories at the flick of a switch, electricity seemed to exist in neither time nor space. It simply was.

This book aims to make those power lines historically visible. In so doing, it broadens narratives of postwar growth, both in scale and subject. By tracing the development of the power lines that ran between Phoenix and the Navajo Reservation through time and across space, *Power Lines* constructs a broad new map of postwar urban, environmental, and political change. Exploring the relationships between natural resources and metropolitan expansion; supplies of energy and demand for electricity; urban boosters, federal officials, and Navajo political leaders; and prosperity and underdevelopment in an emerging region, the book reveals the intimate and unequal connections power lines forged between electrical consumers in Phoenix and the people and landscape of the Navajo Nation. By introducing the expropriation of resources from distant, yet materially vital hinterlands into accounts of postwar metropolitan growth, *Power Lines* expands historical understanding of postwar inequality to include peoples living far from metropolitan centers. By connecting the ecological transformation of the Colorado Plateau to the ever rising

demand for inexpensive electricity in metropolitan Phoenix, it demonstrates that suburbanization triggered environmental changes that reached far beyond America's growing subdivisions. By following power lines from the Colorado Plateau to Los Angeles, Albuquerque, and elsewhere in the Southwest, it suggests that metropolitan growth was spatially far broader than currently understood. Indeed, it argues that accounts of metropolitan growth must reach beyond isolated city-suburb pairings to investigate regional formations created as the collective material demands of growing cities and suburbs created new bonds with human societies and natural landscapes located far beyond metropolitan borders. This book is the story of one such region: the modern Southwest.

By telling this story at the regional, rather than the metropolitan, level, *Power Lines* challenges the borders of recent political history. Over the past decade, a compelling synthesis of postwar American history has focused attention on metropolitan space as the central battleground of American politics. This synthesis has highlighted two central dynamics of postwar politics. First, federal growth politics created new forms of spatial inequality. Extending and expanding New Deal programs after World War II, the federal government took unprecedented steps to subsidize middle-class consumption in ways that were both racially exclusionary and deeply invested in the promotion of capital accumulation in undeveloped metropolitan space. In so doing, these programs led to the development of the new residential and industrial spaces of the postwar suburbs. At the same time, the exclusionary nature of suburban development served to fix poor and minority populations in place in the inner city. Growing metropolitan areas acquired stark inequalities as suburbs formed a "White Noose" around increasingly poor, nonwhite inner cities, strangling them as suburbanites demanded lower taxes, limits on public spending, and other forms of local protection.[23] Second, local growth machines pursued economic development, at least in part, by undermining the hopes federal planners had invested in growth. Economists working for the federal government saw their growth politics as a rising tide that would lift all boats.[24] As an emerging national security state underwrote capital mobility on an unprecedented level, however, local growth machines—coalitions of politicians, businessmen, and property owners—competed with other cities to attract capital by attacking the New Deal state's support for unionization, regulation, and social subsidy. This competition created clear winners. Relatively undeveloped cities of the South and West, lacking the burdens of established regulatory and social welfare states at the state and local level, offered tax and labor incentives to newly mobile industrial capital and quality-of-life amenities to newly

mobile people. The result was the Sunbelt. Cities in the South and West grew at nearly twice the rate of their Midwestern and Northeastern counterparts, reshaping the American economy, national politics, and eventually making its built environment of subdivisions, commercial strips, shopping malls, and industrial and office parks the vernacular landscape of the majority of the American people and its deregulatory, anti-union, low tax policies the successor to the New Deal state.[25]

The pages that follow owe much to this synthesis. The method contained within reflects its emphasis on foregrounding economic and political structures within the broader story of how people attempted to transform their local circumstances. *Power Lines* also reflects the belief that space is a historical text in which can be read the outcome of political struggles as well as a structure that constrains historical agency. This story contains many familiar actors: federal policy makers promoting metropolitan growth, and local businessmen, politicians, and homeowners struggling to turn federal policies toward their own divergent benefits. And it shares the conclusion of the metropolitan synthesis that these struggles have caused profound and enduring geographical inequalities.

Power Lines, however, also argues that the metropolitan synthesis has drawn far too narrow a map of metropolitan space and of the politics of growth. In some cases, containing narratives of historical change within cities and suburbs has left important stories half told. Set almost entirely in metropolitan America, the story of the emergence of a "consumer's republic" exists in narrative and spatial isolation from the new production that enabled it. Similarly, the story of metropolitan boosters' work to draw capital to their cities has lain unconnected to their efforts to capture the energies that stirred that capital to life in its new forms of suburban houses and factories. Stories of metropolitan inequality, as well, have largely sidelined the "devil's bargains" that faced distant communities as new demands pulled their resources—whether fossil fuels, landfill space, or landscapes desirable for tourism—into the metropolitan orbit even as ideas of the underdevelopment and primitivism of the countryside naturalized these inequalities.[26] As the pages that follow show, metropolitan growth structured a series of choices for hinterland residents between continued poverty, outmigration, and damaging ecological transformations.

Metropolitan history's narrow map has also elided the broad assumption shared by federal planners and local boosters that metropolitan growth represented the engine of national economic expansion. "Metropolitan preferences" in federal policy making reflected broad beliefs that urban demand for resources and labor could be agents of hinterland modernization and development. At the same time, those policies

channeled resources from periphery to center, creating new unequal regional connections and positioning peripheral nature as fuel for extending metropolitan growth. In focusing on the struggles for power within the metropolis, then, the synthesis has failed to consider the political and ecological disruptions that metropolitan growth initiated far beyond metropolitan borders.

Assumptions about the metropolitan nature of growth in the postwar Southwest have rendered Indian people marginal to the postwar history of a region with the nation's largest Indian population. In a generous reading, this marginalization reflected political developments in Indian history that seemingly ran counter to dominant stories of American political development. As a federal welfare state born in the New Deal gradually expanded the people included in its provisions during the postwar era, Indians faced termination, a policy characterized by the cessation of federal services and the extension of state authority over Indian lands. As the long civil rights movement shifted to an emphasis on demanding rights and equality, Indian activists pursued the separate legal statuses of sovereignty and self-determination. At worst, the absence of Indians from many narratives of postwar history has reflected an implicit belief that Indians occupied a marginal and relatively unimportant place in modern American history, even in regions that contained significant populations of Indian peoples, a belief abetted by the increasing historical focus on metropolitan America as the locus of historical agency.[27] By introducing Indian peoples into the broader story of Phoenix's growth, *Power Lines* attempts to alter these narratives. The termination era's emphasis on replacing federal with state authority over reservation lands represented part of the political process whereby metropolitan officials attempted to claim and incorporate the resources of distant territories to supply metropolitan demand, a process of "unlock[ing] the natural resources known to exist on the reservations," as Barry Goldwater stated in 1950.[28] Similarly, Navajo demands for sovereignty, self-determination, and decolonization reflected the particular circumstances that faced people experiencing dramatic changes to their land. *Power Lines* demonstrates how Navajo leaders sought to take advantage of energy development, initially by employing similar policies as Phoenix's boosters in an attempt to attract industry and later by seeking the nationalization of energy reserves on reservation lands. It also suggests that the legal structures of the American polity as well as cultural ideas about Indian primitivism combined to defeat these efforts. Most importantly, it demonstrates the centrality of energy supplies on Navajo land to the growth of the Southwest, and the social and environmental inequalities that resulted. Metropolitan development and Indian underdevelopment, it shows, went hand in hand in postwar America.

Finally, remapping metropolitan history at the regional level brings nature into the story of postwar metropolitan development in new ways. Recent scholarship has looked to suburban growth to explain the rise of environmentalism. Witnessing the transformation of open spaces and the air and groundwater pollution that accompanied metropolitan growth, suburbanites, as scholars have shown, demanded new controls on growth, worked to preserve "open land," and turned to nature in increasing numbers as an escape from life that seemed excessively materialistic.[29] Indeed, Phoenix's history reflects both the suburban desire for environmental amenity and the belief that suburban sprawl destroyed nature. Beginning in the 1930s, Phoenix's boosters posed their city as an alternative urban experience that allowed both modern life and easy escape to nature. By the 1970s, however, environmentalists described Phoenix as the poster child of uncontrolled growth, "The BLOB That Ate Arizona," in Edward Abbey's account.[30]

Nature was constitutive of metropolitan experience in a more material way. In using electricity produced both by the combustion of fossil fuels that had stored prehistoric energy in place and by the transformation of water's kinetic energy flowing through canyons that energy had created, Phoenicians created connections to nature. The power lines that reached into their houses brought energies from the Colorado Plateau's present and past into the daily life of Phoenicians at every moment of the day. They represented an artifact of a vast ecotechnological system, a phrase coined by the historian of technology Thomas Hughes to describe the "intersecting and overlapping natural and human-built environments" created as technological change created hybrid systems that blended nature and culture, ecology and economy. While ecotechnological systems, as both William Cronon and Richard White have detailed, harness nature to distinct human purposes, they remain embedded within the flows and constraints of the natural environments on which they rely.[31] Indeed, while the electricity that powered Phoenix seemed, to its consumers, to materialize from the wall sockets of suburban homes, it remained deeply connected to the places where, over time, geological forces had located bituminous coal or had directed flowing water. While those places might be peripheral for consumers, they remained central to the system as a whole.

The relative imbalance of power between the residents of Phoenix and the Navajo Reservation, places on opposite points of the Southwest's ecotechnological system, reflects the metropolitan preferences of postwar policy making that from the 1940s to the 1970s encouraged energy resource development as a core feature of metropolitan and economic growth. As *Power Lines* demonstrates, the interest in making inexpensive energy available to metropolitan residents overrode, by the early 1960s,

long-lasting beliefs among liberals that electricity generated from resources on federally controlled land should be publicly controlled. Advocates of public power had long seen public power as providing a yardstick that would discipline the private sector while bringing electricity to underserved consumers in rural America.[32] By the 1960s, however, the possibility of interconnecting with private utilities and creating a vast power pool that could guarantee reliable service across space overrode those concerns. Federal officials found willing partners in officials from private utilities and boosters across the Southwest, who welcomed the potential for new energy supplies on federally controlled lands to meet burgeoning metropolitan demand and expand both metropolitan populations and corporate profits. Phoenix's spectacular postwar growth, then, was not only the artifact of successful boosters or savvy politics; it also occurred because of vast supplies of energy located on the Navajo Reservation and the success of metropolitan actors in claiming this energy for their own benefit. These changes transformed the geography of electrical production in the region. In the 1950s, consumers had relied on natural gas burned in their immediate vicinity, as well as large hydroelectric dams on the Colorado River. By the early 1970s, they relied overwhelmingly on coal that was both mined and transformed into electricity on Indian land. By that time, Navajo Mine fed 4,200 tons of coal per day to Four Corners Power Plant. Black Mesa and Kayenta Mines sent an additional 15,000 tons to two other power plants.[33] These were small signs of an industry-wide shift toward coal in energy production during the 1960s, a shift that both shaped the environmental history of the Southwest and created today's environmental future.

Power Lines places its narrative of metropolitan growth within a broader regional context, then, in order to expand the spaces and peoples included in chronicles of postwar growth. It demonstrates that the decentralization of power that metropolitan historians have charted—the construction of the suburban "white noose"—was accompanied by powerful centralizing tendencies that drew distant landscapes into metropolitan orbits.[34] The search for the natural resources required for metropolitan growth, and for spaces to discard the waste produced by metropolitan consumption, led federal, state, and local actors to create new infrastructures. These power lines, aqueducts, and landfills reorganized economies, ecologies, and societies in distant landscapes. Once constructed, they shaped possibilities and limited opportunities for change.[35] These infrastructures invested metropolitan actors in the transformation of distant landscapes while drawing distant people into new relationships with metropolitan centers. The result was not only metropolitan sprawl but also the reorganization of politics, society, and nature in new, far-flung regions. Coming to terms with these distant changes requires new stories that illustrate the

connections forged between cities, suburbs, and distant hinterlands in the processes of metropolitan growth.

Power Lines tells this story of regional formation in four parts. Part I—"Fragments"—tells the prehistory of the modern Southwest. It begins with the natural history of energy in the Southwest, detailing how energy, as coal, became located in particular places and, as water, reshaped others, creating the landscapes of the Colorado Plateau and the Salt River Valley where Navajos and Phoenicians, respectively, developed ways of life tied to the conditions natural energy had created. While these places developed atop landscapes shaped by the work of the same natural system, few connections existed between them. This part extends to the 1930s, when federal efforts to develop the Colorado River's energy at Boulder Dam dramatically altered that natural system by controlling the energy of flowing water that had, for millennia, shaped the Southwestern landscape.

Part II—"Demand"—details the population and manufacturing growth that dramatically increased electrical use in the postwar years. It foregrounds the efforts of Phoenix's powerful growth machine to rebrand their city as a place with modern amenities and high quality of life, to gain control of local institutions, and to reshape politics to make Phoenix and Arizona a low-tax, low-regulation, anti-union magnet for business. These efforts helped bring billions of dollars' worth of manufacturing capital and new housing development to metropolitan Phoenix as well as hundreds of thousands of new residents to the desert Southwest. These actions transformed Phoenix, as symbolized by the deliberate change of the colloquial name for Phoenix's surroundings from "Salt River Valley" to "Valley of the Sun." Underlying this change was a transformation in land use, as subdivided agricultural fields and open desert became a landscape of homes and light industries that consumed 2,000 percent more electricity in 1970 than it did in 1945.

Part III—"Supply"—explores how coal from the Navajo Reservation became the energy source that met first Phoenix's, and then other Southwestern cities' demand for electric power between the early 1950s and the late 1960s. In part, the story told in this part is one of technological change. As extra-high-voltage power lines became capable of transmitting electricity hundreds of miles with minimal energy loss, the construction of power plants far from metropolitan areas became economically viable. More important in this story, however, are political decisions about the nation's public lands and the people who lived on them. Political actors in the Interior Department, metropolitan Phoenix, and Navajo Tribal Government came to believe that energy development could resolve both potential electrical shortages in metropolitan areas

and poverty on the Navajo Reservation. These actors had very different ideas, however, of energy development's political dynamics. Navajo tribal leaders envisioned energy development leading to tribal industrialization, which they envisioned as a means of protecting their people in an era in which Indian policy threatened the eventual end of federal services. Interior officials, including members of Phoenix's growth machine serving in the first Republican administration in twenty years, valued regional, rather than reservation, development. Their policies, offering generous lease terms to private developers, functioned to make hinterland energy available to metropolitan consumers at low costs. Energy development proceeded rapidly. In 1961, power plants generated 175 megawatts of electricity using coal from one mine on the Navajo Reservation. Ten years later, including those power plants under construction, power plants on or near the Reservation generated 8,690 megawatts of electricity, drawing coal from three large strip mines on Navajo and Hopi land. This new generating capacity, more than five times the amount of electricity of that at Hoover Dam, changed the politics of energy in the Southwest. From the 1930s to the 1950s, federal agencies, namely the Bureau of Reclamation, had directed the development of the region's electrical networks. In the mid-1960s, however, private utilities in the region formed a new a consortium to develop power plants using Navajo coal, which now set the course of development. By the late 1960s, the Bureau of Reclamation purchased and sold electricity into the massive pool of power that the consortium controlled, a public-private system, largely controlled by private companies with long-term leases on power plants, that directed the terms by which energy was produced, transmitted, and consumed in the region.

Part IV—"Protest"—explores how this new system of coal-fired power plants shaped political efforts to critique Southwestern growth in the 1960s and 1970s. Chapter 6 tells the story of the broad-scale environmentalist attack on Phoenix as the apotheosis of America's misguided ideas about growth that was sparked by a Bureau of Reclamation proposal to build new dams near the Grand Canyon. Intended to provide electricity for an aqueduct carrying Colorado River water to Phoenix and Tucson, the dams symbolized to environmentalists the insatiable destructive capacity of metropolitan demand. Even as environmentalists attacked the excesses of Southwestern growth, however, they helped forge a compromise in which coal-fired power plants, rather than hydroelectric dams, powered the new aqueduct. The resulting accord divided hinterland space in the Southwest into sacred spaces of pristine nature, set aside for the enjoyment of tourists, and productive spaces where energy development benefited metropolitan consumers.

The proliferation of power plants also led to new critiques by young Navajo activists and tribal officials in the late 1960s and 1970s. For many Navajos, the plants served as a symbol of, in the words of tribal chairman Peter MacDonald, "the colonial relationship between the Navajo Nation and the cities of the Southwest." By the late 1960s, Navajos increasingly criticized energy development and called for greater tribal control over tribal lands, a movement they termed "nationalism." Navajo nationalism took markedly different paths among tribal leaders and young activists, however. MacDonald and other tribal officials in the 1970s looked to the OPEC (Organization of Petroleum Exporting Countries) nations currently reorganizing the world's petroleum supplies as providing an example of how control of energy development could create new political power for "the emerging Navajo Nation." At the same time, young Navajos challenged the authority of both energy companies and the Navajo officials to claim lands occupied by long-standing Navajo communities. They successfully used grassroots organizing tactics and new federal environmental laws to stave off new development. Navajo tribal officials and grassroots leaders were less successful, however, in transforming the conditions or the existing infrastructure of energy development, which continued to supply power to metropolitan consumers. This history, then, provides powerful evidence for the structural constraints created by capital-intensive infrastructure once it was set in place.[36]

With its focus on the regional development of electrical power networks in the Southwest, *Power Lines* largely avoids two topics that readers might expect to find. First, it contains little discussion of the uranium mining and processing that occurred on the Navajo Reservation from the late 1940s into the 1970s. The eastern portion of the Navajo Reservation existed as the westernmost portion of a geological belt containing the majority of uranium reserves of the continental United States. Uranium mining did replicate many of the social and spatial dynamics explored herein. Indeed, the public health effects of uranium mining are far more proven than those related to coal mining and coal-fired power production. Both Navajo uranium miners and Navajos who resided near uranium mills have suffered from increased rates of lung and thyroid cancers, pneumoconiosis, and tuberculosis, and have received "compassionate payments" from the federal government in recognition of their contribution to the postwar national security state. No such compensation has been forthcoming for the increased rates of asthma and other respiratory diseases observed in Navajos living near areas undergoing energy development.[37] Such epidemiological patterns demonstrate that, as Brett Walker argues, "people really do physiologically experience nations'

policies and priorities" in the form of industrial diseases that represent "physical inscriptions of the nation's policies on the body."[38] At the same time, uranium mining and processing had significantly different spatial and temporal dynamics than electrical energy development. Until 1971, the Atomic Energy Commission was the sole purchaser of American uranium. Uranium development thus forged links between the postwar national security state, private companies, and Navajo workers. These connections existed on the federal level, with few of the ties between metropolitan consumption and hinterland production that form the heart of *Power Lines*' analysis.[39]

Second, *Power Lines* deliberately avoids use of the term "Sunbelt." In part, this choice reflects the language used by the people whose history is recorded herein. Few people in Phoenix before the mid-1970s used "Sunbelt" to describe the places they lived.[40] This rhetorical absence was a national phenomenon. "Sunbelt" became widespread as a regional description only after Kevin Phillips used the term in his 1969 *Emerging Republican Majority* to describe the fast-growing cities of the South and West that he saw as the Republican Party's future political base, and gained greater currency in the 1970s with the increasing use of "Rustbelt" or "Frostbelt" to describe the industrial cities of the Midwest and Northeast hit hard by deindustrialization.[41] As elected officials from these diverse metropolitan locations came together in shared appeals for fairer distribution of federal dollars, in the case of the Rustbelt, or in defense of growth and opposition to new federal regulation, as in the case of the Sunbelt, the "Sunbelt" and "Rustbelt" began to exist as organized worlds of meaning, in short, as places, in a way that they had not in the immediate postwar period.[42] Before those changes in the 1970s, however, the Sunbelt did not exist. What did were a series of regions that grew as they competed with one another for the capital set loose in the postwar political economy even as they benefited from federal-policy preferences for metropolitan development.

Power Lines instead uses terms that people living in both Phoenix and the Navajo Reservation used to describe the region and their visions of its future: "modern" and "Southwest." As early as 1941, the Phoenix Chamber of Commerce explained that "Phoenix's strategic location, the largest city between Dallas and Los Angeles, makes it the logical wholesaling and retail outlet for the Southwest."[43] By the mid-1950s, these representations had become more colorful. Phoenix, the title of one promotional pamphlet boasted, was *The Economic Capital of the Great Southwest Sun Country!* while ads boasted that Phoenix was "*the* important distributing center for quite a chunk of the Southwest."[44] These claims to centrality served as claims to authority. Drawing on long-held booster theories of development, Phoenix's growth machine suggested the resources of

the countryside should flow, naturally, to the dynamic center.[45] Reference to the "Southwest" in Navajo political discourse was less frequent, but still prominent. Navajo political leaders deployed "Southwest" when appealing for the extension of metropolitan prosperity to reservation lands. At the dedication of Four Corners Power Plant, Paul Jones announced that energy and industrial development would make "the Navajo Tribe a force in the Southwest . . . coupled with the further development of Phoenix, Tucson, and other cities."[46] As those dreams became increasingly unfulfilled by the early 1970s, Peter MacDonald, Jones's successor as tribal chairman, criticized "the colonial relationship between the Navajo Nation and the cities of the Southwest" and promised renewed steps to "fully develop the Navajo Nation as an important economic, social, and political force in the Southwest."[47] Navajo critics of energy development, as well, used "Southwest," but to attack the continuing environmental and social inequalities that regional membership imposed on their homeland. "People across the Southwest," one student wrote to the *Navajo Times*, "destroyed our land so they can use electric can openers and tooth brushes." Another writer denounced Arizona governor Jack Williams for delivering the "same speech he has given to the great white middleclass children of Phoenix, even though they are sustained by water stolen from the Navajos."[48] The Southwest, then, was not merely a regional description but a form of organizing space politically, a means toward claiming resources and contesting their proper distribution. "The Southwest" was the result of political and economic changes that took and made place.[49]

Similarly, *Power Lines* uses "modern" to reflect the terms by which people in the Southwest represented the trajectory of the changes that surrounded them. Visions of an explicitly modern Southwest emerged as Phoenicians sought to distinguish their city from an earlier regional association with primitivism and underdevelopment. Locals portrayed "the metropolitan city of Phoenix" in the 1930s as "a jewel of modernity set in the green carpets of year-round crops," dramatically different from "the more ancient cities of the Southwest."[50] Phoenix also stood in stark contrast to the Navajo Reservation, where Indians, one Arizona magazine explained in the 1950s, "dance in the ancient way, sing the old chants, retell tales of olden days, cling to habits and customs hoary as the hills." "Navajoland," the same article explained, represented a place to escape "the swish and zoom of the times."[51] For Navajo leaders, Phoenix served as guidepost and counterpoint as well. Phoenix's residential comforts and industrial expansion represented a goal for Navajo leaders in the late 1950s, as they imaged "many industries" on the reservation and "two light bulbs in every hogan" leading to "a modern way of living."[52] By the early 1970s, Navajo visions of modernity had fractured. Peter MacDonald and other Navajo leaders envisioned tribal controls

over energy supplies as enabling the creation of a powerful "emerging Navajo Nation," part of an "Indian OPEC" that would assert tribal rights over resources to shape politics and space throughout the region. At the same time, Phoenix increasingly represented the perils of modernity that many Navajos hoped to avoid. Letters in the *Navajo Times* portrayed preservation of the "fresh, clean air" and "beautiful landscape" of northern Arizona as a priority of Navajos' economic future, while "the highways and new houses of Phoenix," which threatened to "spoil our beautiful home" represented "the kind of modern development we wish to avoid." "We do not want and will not live the life of an ulcerated white, middle-class Christian suburbanite," Michael Benson wrote to the *Navajo Times*. Instead, Benson called for a "Navajo road" that allowed Navajos to drive pickup trucks and live in "warm, modern homes with electricity" without abandoning "a heritage, unique and secure, in this time of chaotic and rapid change."[53]

The modern Southwest emerged not only as Phoenicians and Navajos used common language to describe space, but also as a region linked in the material and spatial connections that carried energy from the Navajo Reservation into the homes of Phoenix.[54] My focus on these regional connections, their role in the emergence of the cultural and material region I call the modern Southwest, represents a second reason I avoid "Sunbelt." Too often, historical studies focused on the Sunbelt have taken region for granted conceptually, assuming that the metropolitan complexes that grew explosively after World War II possessed not only a shared moment of historical emergence but a shared regional identity. Promising recent work, such as Elizabeth Shermer's work on Phoenix's postwar growth machine and Joe Crespino's explorations of Strom Thurmond's attempts to appeal to voters in the West, has demonstrated how historical actors worked across space to forge regional connection. Too often, however, case studies located solely within single metropolitan spaces have attempted to suggest a regional identity, particularly in the emergence of postwar conservatism, based in a suburban anti-statism common across the nation.[55]

In using "modern Southwest" to describe the space that emerged in regional linkages created after World War II, *Power Lines* argues for an understanding of regional formation produced both in the material ties that connected spaces and in the shared understandings of space that those connections abetted.[56] It focuses on electrical power networks because the infrastructure that connected energy supplies with consumer demand represented a powerful source of such connections. Power companies and federal officials mapped energy resources on a regional level, they planned power lines to connect regional "load centers," and, by the

late 1960s, collaborated closely to distribute electricity throughout the region.

Power Lines also focuses on electrical power networks to reveal the unequal and frequently unperceived systems of commodity production, distribution, and consumption that underlie and abet daily life in metropolitan America.[57] Commodities from the countryside have long fed and clothed urban consumers while playing a fundamental role in creating the structures of modern capitalism.[58] The power lines that ran between Phoenix and the Navajo Reservation intensified the structural inequalities that had long existed between city and countryside. Electrical networks require the simultaneous and constant balancing of supply and demand. Electricity does not so much flow, as we are accustomed to thinking about the motion of commodities in a market system, as flash, annihilating the space between consumption and production in both the immediacy and the constancy of its usage. For such a system to function, surety of energy supply became vital. The temporal lag between production and market entry involved in other forms of peripheral commodity production—the attempt by the farmer, or the mining conglomerate for that matter, to bring commodities to market when prices were high—threatened to destabilize metropolitan energy networks. To avoid such conditions, the terms of energy production granted extensive control—in the form of long-term contracts, fixed prices, and limited opportunity for renegotiation—to mining companies and electrical utilities. These terms were not merely the function of economics, they were political decisions reflecting the determination that metropolitan economies stood as the vital agent of postwar growth and the belief that Indian people possessed limited capacity to participate in contemporary economic life. Energy development granted Navajos money, but left them little meaningful power over the production occurring on their land once infrastructure was in place. That final point is vital. Navajos did retain political and economic power before contracts were signed and capital took material form as drag lines, generator turbines, and transmission lines. Navajos could and did attempt to shape the terms of energy production to meet their needs as they understood them at particular points in time. Once capital was fixed in place, however, the possibility for systemic change faced significant limits.

The practices of electrical consumption made it difficult for consumers to appreciate their inequalities. While Navajos quickly came to recognize the inequalities created by Phoenix's "air conditioned lifestyle," the practices of electrical consumption made them less evident to consumers. In an electrified home or factory, the connections to the distant landscape of electrical production are constant and readily available at the flick of

a switch. Electricity's constant presence, other than in exceptional moments of blackout, in short, obscures appreciation of the spatial breadth of the connections in which consumers are engaged. Electricity comes with no label saying, "Made in China." As public and private utilities combined various sources of energy—flowing water, burning coal, and natural gas—into a massive pool from which they drew their electricity, these connections became more obscured, even as energy development on Navajo land intensified. Metropolitan residents, thus, created and intensified the modern Southwest's deeply unequal regional connections in the practices of daily life, even if they never spoke of the Southwest.

By the late 1960s, the act of turning on a light switch or air conditioner in Phoenix, Albuquerque, or Los Angeles led metropolitan consumers to participate in material networks that linked them intimately to the Navajo Reservation. Such connections remained largely unacknowledged in the daily lives of metropolitan consumers. They were far more visible on the Navajo Reservation. Ash and tailing piles, power-plant stack emissions, and the stark sentinels of transmission towers became signs of regional subordination. Peter MacDonald suggested as much to an audience of Western officials in 1975, "Our own people have the pleasure of watching giant transmission lines march across the land," he told the Western Governors Association, "at the same time as they are denied the opportunity to have electric service to their own homes which sit beneath the transmission lines."[59] MacDonald spoke to the central dynamic of the modern Southwest as it developed from the 1930s to the 1970s. The uneven distribution of energy had produced a region in which economic prosperity and high quality of life in metropolitan centers required the dual exploitation of people and nature on the Colorado Plateau, creating significant, frequently unrecognized, costs for distant environments and marginalized peoples.

This is a story rooted in particularities of time and space in the Southwest, but it has connections to the history of the United States, and to the world at large. The high-energy society of postwar America turned to natural resources on the periphery not only in the Southwest. In the late 1960s, just as coal from the Navajo Reservation came to supply increasing numbers of consumers in the Southwest, the Crow Tribe in eastern Montana signed lease agreements to mine coal across their reservation lands for use by utilities in Illinois, Minnesota, and Wisconsin. In the early 1970s, coal companies began blasting the tops off mountains in West Virginia, Kentucky, and Pennsylvania to reveal the coal beneath, filling nearby hollows with leftover debris, and shipping coal to power plants serving the vast metropolitan area stretching from Richmond to Philadelphia. As high-energy society became the goal of development worldwide, the strip mines run by Shenhua Group and ChinaCoal in Shanxi Province

and Inner Mongolia replaced the mines at Black Mesa as the largest strip mines in the world in the 1990s, providing energy for Beijing, Shanghai, and other burgeoning urban centers. And in recent years, natural gas companies have begun injecting high-pressured water into geological formations deep below the earth's surface in upstate New York, central Pennsylvania, and eastern Ohio, fracturing subsurface geologies below some of the areas most hard hit by postwar economic restructuring.

In each case, these natural energies, long stored in place, became the fuel of modernity. Many of the people who lived above them experienced new opportunity in the form of wage work or royalty payments. They also faced environmental exploitation as the lands they knew changed dramatically. Transformed into electricity, energy from these lands traveled through power lines into the lives of people living far distant, people who ignored electricity even when they relied upon it. That ignorance appears no longer an option as the emissions created in the transformation of fossil fuels to electricity are likely to shape the human future itself. That potential future makes it important to notice power lines anew. It is the hope of this book to participate in that process, and make power lines and the unequal connections they have created more visible, both in the Southwest and in the world at large.