WILDLIFE LAW CALL

LEGAL ISSUES IN ENERGY DEVELOPMENT AND WILDLIFE

SPRING 2018

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The North American Model of Wildlife Conservation

Brittney Ellis

The North American Model for Wildlife Conservation is a set of principles that governs the conservation and management of wildlife in the United States and Canada.[1] The goal of the model is to preserve wildlife for future generations.[2] By the mid-1880s, in North America, many once-abundant species had nearly vanished as a result of overexploitation by market hunters. However, the determination of sport hunters, and conservationists such as Teddy Roosevelt, George Bird Grinnell, and Aldo Leopold, to conserve wildlife for future generations led to the development of the principles exemplified in the North American Model.[3]

In the United States, the model has become the basis for policies developed by state fish and wildlife agencies.[4] The model consists of seven principles.[5]

The Public Trust: The keystone component of the model is the concept that wildlife is owned by no one and is held in trust for the benefit of present and future generations by the government. The common law basis of this doctrine is an 1842 Supreme Court decision that stated that certain resources could not be taken into private ownership.[6]

Elimination of Markets for Game: Due to the destructive effects of commerce in dead wildlife in the late 1800s and early 1900s, hunters and anglers led the effort to end markets for wild game. Markets for game and nongame wildlife are unacceptable because they privatize a common resource and can lead to population declines .[7]

Allocation of Wildlife by Law: Wildlife is allocated for use by citizens via legislative processes and should not be reserved for those with special privilege. All citizens can participate in developing systems of wildlife conservation.[8]

Taking of Wildlife Only for Legitimate Purposes: Wildlife should never be hunted for profit and should only be used for non-frivolous reasons such as for food and fur, self-defense, and property protection.[9]

Internationality of Resources: One nation's management or lack of management has consequences for its neighbors. Therefore, we should strive for international cooperation in wildlife conservation. The Migratory Bird Treaty Act of 1918 exemplifies international cooperation in conservation.[10]

Scientific Management: Science is a crucial requisite of wildlife management.

Democracy of Hunting: The opportunity for citizens in good standing to hunt in Canada and the United States is a hallmark of our democracy.[11]

I. Wildlife and Nonrenewable Energy

a. Oil and gas

Case brief: *Western Energy Alliance v. Zinke*

Michael Ricchi

Western Energy Alliance (WEA) brought an action seeking declaratory relief against the Bureau of Land Management (BLM) for granting too few oil and gas lease sales. WEA claimed under the Administrative Procedure Act (APA), Freedom of Information Act (FOIA), and the Declaratory Judgment Act (DJA) that BLM violated the Mineral Leasing Act. The Wilderness Society, Wyoming Outdoor Council, Southern Utah Wilderness Society, San Juan Citizens Alliance, Great Old Broads For Wilderness, Sierra Club, WildEarth Guardians, Center For Biological Diversity, and Earthworks (Intervenors) moved to intervene. To intervene, a, intervenor must show:

[T]he application is timely; (2) the applicant[s] claim[ ] an interest relating to the property or transaction which is the subject of the action; (3) the applicant[s'] interest may as a practical matter be impaired or impeded; and (4) the

[1] Organ, J.F., et al, The Wildlife Society Technical Review 12-04, *The North American Model of Wildlife Conservation*, THE WILDLIFE SOCIETY, Dec. 2012, at 1.

[2] *Id*.

[3] *Id.*

[4] *Id.* at 2.

[5] *Id.* at 11.

[6] *Id. Martin v. Waddell's Lessee*, 41 U.S. (16 Pet.) 367, 410 (1842).

[7] Organ, *supra* note 1, at 14.

[8] *Id.* at 16.

[9] *Id.* at 18.

[10] *Id.* at 19.

[11] *Id.* at 23.

applicant[s'] interest is [not] adequately represented by existing parties.

The U.S. District Court for the District of New Mexico found that Intervenors' motion to intervene was timely and demonstrated an "interest in protecting public lands from the impacts of oil and gas drilling." However, the district court denied Interveners' motion on the grounds that they had "failed to show that the pending litigation ha[d] the potential to harm their environmental interests, or that the presently named parties [BLM] could not adequately represent their interests." Intervenors appealed the decision.

The U.S. Court of Appeals for the Tenth Circuit agreed that the intervention was timely. In examining Intervenors' discrete interests the Court found two interests: the Intervenors' continued will to "(i) . . . minimiz[e] the environmental impact of oil and gas development on public lands; and (ii) preserv[e] the reforms they had worked to implement, including the Leasing Reform Policy." Furthermore, the Court notes Intervenors' "record of advocacy" for these two interests and their interest in protecting public lands from additional oil and gas leases gave them a protected interest.

Additionally, Intervenors had an important hand in developing and preserving the Lease Reform Policy, which the Court found WEA sought to revise or rescind in this action. WEA challenged the Leasing Reform Policy through its argument against numerous challenges in compliance. WEA essentially asked the district court to direct BLM to revise or rescind the Leasing Reform Policy. The Court found that, because of Intervenors' environmental interests and their interest in the Leasing Reform Policy, they had an interest in the lawsuit. In determining whether this interest would be impaired, all that needed to be shown was a "minimal burden."

The Court found that, WEA challenged BLM to meet the oil and gas lease sales and through this BLM could have to "revis[e] or rescind[]" the Leasing Reform Policy with oil and gas leases. The Court held that, since litigation could pose a threat to change the Leasing Reform Policy, the interest of the intervenors may be impaired or impeded.

The Court then examined whether Intervenors were adequately represented by BLM. In its determination, the Court looked at the ability for the public to Intervene even with government representation. The Court usually rules that the government has dissimilar interests due to an individual's specific single interest compared to the broad governmental public interest. However, in the past, the Court has held that when there is a single specific issue within the litigation where the government has a clear position and nothing suggests that the position might be subject to change in the future, then government representation is adequate. However, the Court held that the change in presidential administration may cause policy shifts due to President Trump's executive orders ordering agencies to review regulations that are potentially burdensome on oil and gas resources. The Court held that BLM cannot adequately represent Intervenors' interest and reversed and remanded to the district court ordering intervention as of right.

In dissent, Judge Hartz argued that 1) Intervenors' purported interest was already conceded and therefore not subject to litigation and 2) they lacked an interest in the actual amount of oil and gas leases already set out in the Leasing Reform Policy. Judge Hartz also felt that, even if the Intervenors raised a different argument now to intervene in the action it would be untimely.

—877 F.3d 1157 (10th Cir. 2017).

Case brief: *Alaska Oil & Gas Association v. Ross*

Michael Ricchi

The National Marine Fisheries Service (NMFS) determined that *Phoca hispida hispida* (the Arctic subspecies of the ringed seal) was threatened under the Endangered Species Act (ESA) on December 28, 2012.[12] The Alaska Oil and Gas Association (AOGA), American Petroleum Institute (API), North Slope Borough (NSB), Arctic Slope Regional Corporation (ASRC), Northwest Arctic Borough (NAB), NANA Regional Corporation (NANA), and Inupiat Community of the Arctic Slope (Inupiat Community) (collectively Intervenors) brought an action that NMFS acted arbitrarily and capriciously in listing the Arctic ringed seal as threatened.[13]

[12] *Alaska Oil & Gas Ass'n v. Nat'l Marine Fisheries Serv.,* No. 4:14-CV-00029-RRB, 2016 WL 1125744, at *1 (D. Alaska Mar. 17, 2016), *rev'd and remanded sub nom. Alaska Oil & Gas Ass'n v. Ross*, No. 16-35380, 2018 WL 821866 (9th Cir. Feb. 12, 2018); (hereinafter Alaska I).

[13] *Id.* at *2.

The United States District Court for the District of Alaska reviewed the listing and applied the Ninth Circuit's test to examine all relevant factors behind NMFS's decision: 1) whether the decision was based upon the best scientific and commercial data available; and 2) better scientific data was not disregarded.[14]

A court reviewing an agency action must find clear error to determine that an agency's decision was "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." The ESA listing factors for endangered and threatened species include:

> (A) the present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.[15]

To be listed as threatened, the factors must show that the species "is likely to become an endangered species within the foreseeable future through all or a significant portion of its range."[16] In reviewing these factors the district court held that:

> (1) the lack of any articulated discernable, quantified threat of extinction within the reasonably foreseeable future; and (2) the express finding by NMFS that (a) the proposed protective regulations for threatened subspecies of the ringed seal were not necessary or advisable for the conservation of the Arctic ringed seal at this time and (b) the existing protections under the Marine Mammal Protection Act made it unlikely that the proposed protective regulations would provide appreciable conservation benefits.[17]

The district court reasoned that NMFS did not rely upon the best available science.[18] The NMFS first, lacked data to support the threatened listing as well as a recovery plan.[19] Second, the reliance on the Arctic Circle Climate Change Models for habitat loss projections up to 100 years was too speculative to be considered the foreseeable future and support the listing.[20] The district court, for the reasons above, held that NMFS acted arbitrarily and capriciously in listing the Arctic ringed seal as threatened.[21]

On appeal NMFS claimed that the district court erred by:

> (1) misappl[ying] Section 4 of the ESA by requiring long range quantitative data that is not available; (2) err[ing] by considering the agency's decision not to adopt a protective regulation under Section 4(d) of the ESA; and (3) mistakenly rul[ing] that the NMFS finding that the Arctic ringed seal is likely to be in danger of extinction by 2100 because of sea ice loss and other climate change impacts was not supported by the record and was too speculative.[22]

The appellate court reasoned that the district court misapplied ESA § 4 by requiring quantitative data that was not available because there is no "wait and see" criteria for the listing only a more-likely-than-not determination.[23] Ruling out the "wait and see" analysis and using a more-likely-than-not" has been used because "[u]ncertainty regarding the speed and magnitude of that adverse impact, however, does not invalidate data presented in the administrative record that reasonably supports the conclusion that loss of habitat at key life stages will likely jeopardize the [Arctic ringed seal's] survival over the next 85 years."[24]

All that NMFS needed to show is that the species was likely to become endangered in the foreseeable future.[25] NMFS successfully made that showing based on growing climate change and loss of habitat.[26] The U.S. Court of Appeals for the Ninth Circuit held that reliance on the Arctic Circle

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[14] *Id.*

[15] *Id.* at *5; 16 U.S.C. § 1533(a)(1).

[16] 16 U.S.C. § 1532(20); 50 C.F.R. § 424.01(m) (10-1-12).

[17] Alaska 1, *supra* note 12, at *14.

[18] *Id*.

[19] *Id*.

[20] *Id*.

[21] *Id*.

[22] *Alaska Oil & Gas Ass'n v. Ross*, No. 16-35380, 2018 WL 821866, at *1 (9th Cir. Feb. 12, 2018); (hereinafter Alaska II).

[23] *Id.* at *2.

[24] Alaska Oil & Gas Ass'n v. Pritzker, 840 F.3d 671, 683 (9th Cir. 2016), *cert. denied sub nom. Alaska v. Ross*, 138 S. Ct. 924 (2018), and *cert. denied sub nom. Alaska Oil & Gas Ass'n v. Ross*, 138 S. Ct. 924 (2018).

[25] Alaska II, *supra* note 22, at *2.

[26] *Id*.

Climate Change Models for habitat loss projections until 2100 were "reasonable and scientifically supported methodology for addressing volatility in its long-term climate projections, and it represented fairly the shortcomings of those projections—that is all the ESA requires."[27]

Therefore, the appellate court held that NMFS listing of the Arctic ringed seal as threatened under the ESA was not arbitrary and capricious.[28]

—No. 4:14-CV-00029-RRB, 2016 WL 1125744 (D. Alaska Mar. 17, 2016), *rev'd and remanded sub nom. Alaska Oil & Gas Ass'n v. Ross*, No. 16-35380, 2018 WL 821866 (9th Cir. Feb. 12, 2018).

Case brief: *NRDC v. National Park Service*

L. Clare Johnson

Environmental conservation organizations (Plaintiffs) brought an action challenging the National Park Services' (NPS) approval of a plan by Burnett Oil Co., Inc. (Burnett) to conduct a three-dimensional seismic geophysical survey to identify potentially commercially viable oil and gas deposits in Big Cypress National Preserve in Southern Florida.[29] Plaintiffs are seeking declaratory and injunctive relief for violations allegedly committed by Burnett.[30] The alleged violations include violations of the Administrative Procedures Act (APA), National Environmental Policy Act (NEPA), Endangered Species Act (ESA), and 36 CFR Subpart 9B containing NPS regulations governing oil and gas activities on federal lands[31]

The Big Cypress Preserve was established by Congress in 1974, to "ensure the preservation, conservation, and protection of the natural, scenic, hydrologic, floral and faunal, and recreational values of the Big Cypress watershed in the State of Florida and to provide for enhancement and enjoyment thereof."[32] In creating the preserve, Congress instructed the Secretary of the Interior not to acquire oil and gas rights to the land it was purchasing.[33] This limitation created a severed estate in the preserve with the United States owning the entirety of the surface lands and the majority of mineral rights remaining in the hands of private owners.[34]

The discovery of the Sunniland Trend in Southern Florida created interest in oil and gas exploration within the boundaries of the Big Cypress Preserve.[35] Burnett entered into an agreement with the mineral owners to establish terms for the exploration and then submitted a plan to the NPS for review. [36] Burnett hired an environmental consulting firm and provided NPS with a first draft EA.[37] This first draft was the beginning of a lengthy process during which Burnett carefully reviewed and amended its proposal for seismic exploration within the preserve.[38]

As part of this process NPS provided the Fish and Wildlife Service (FWS) with a biological assessment (BA).[39] FWS commented on the BA and NPS issued a revised BA assessing the effects of the Burnett plan on the eleven federally-listed or candidate species living within the preserve.[40] NPS concluded that the Burnett plan was "not likely to adversely affect" the threatened American alligator, threatened eastern indigo snake, threatened Audubon's crested caracara, endangered Everglade snail kite, endangered red-cockaded woodpecker, threatened wood stork, endangered Florida bonneted bat, and endangered Florida panther.[41] It also found that the plan is "not likely to adversely affect" the gopher tortoise, Florida prairie-clover, or the Florida pineland crabgrass, all of which are ESA candidate species.[42]

In the revised BA, NPS concluded that the proposed project could affect the Florida panther and the Florida bonneted bat, but that the impact would be insignificant due to the brief and temporary nature of the seismic testing. NPS also stated that the impact to both species could be mitigated through practices such as limiting ORV use to preexisting trails and roads and attempting to identify and avoid potential nesting and roosting sights for the Florida

[27] *Id*.

[28] *Id*.

[29] *Natural Res. Def. Council v. Nat'l Park Serv.*, 250 F.Supp.3d 1260, 1272 (M.D. Florida, 2017).

[30] *Id.*

[31] *Id.*

[32] *Id*. at 1273 (quoting Pub. L. 93-440, §1, 88 Stat. 1258 (Oct. 11, 1974)).

[33] *Id*. at 1274.

[34] *Id*.

[35] *Id*. at 1276.

[36] *Id*. at 1277.

[37] *Id*.

[38] *Id*.

[39] *Id*. at 1279.

[40] *Id*. at 1280.

[41] *Id*.

[42] *Id*.

bonneted bat.[43] FWS issued a letter concurring with the findings of the BA and NPS began periods of notice and comment on the proposal for oil and gas exploration in the preserve that significantly exceeded the requirements set forth in NEPA.[44] On May 6, 2016 NPS issued a finding of No Significant Impact (FONSI) and allowed for the Burnett proposal to go forward with forty-seven total minimization and mitigation measures.[45]

Plaintiffs contested the NPS's FONSI and brought eight claims for alleged violations of the APA, NEPA, and the ESA.[46] These claims all rise from what Plaintiff saw as failures to carefully consider all alternatives to Burnett Oil's plan and to carefully study the effects the proposed plan will have on the habitat and animals living within the boundaries of the Big Cypress Preserve.[47]

The Court reviewed all allegations and records of NPS's extensive process before approving of the Burnett plan. After this review, Court determined Defendants fulfilled all the requirements of NEPA, ESA, and the APA.[48] The Court granted Defendant's motion for summary judgment and denied Plaintiff's summary judgment request.[49]

—250 F.Supp. 3d 1260 (M.D. Fla. 2017).

[43] *Id*.
[44] *Id*.
[45] *Id*. at 1281.
[46] *Id*. at 1284.
[47] *Id*. at 1285.
[48] *Id*. at 1311.
[49] *Id*.

Case brief: *Indigenous Environmental Network v. U.S. Dep't of State*

L. Clare Johnson

Indigenous Environmental Network and North Coast River Alliance (Plaintiffs) brought an action against the U.S. Department of State and other federal agencies (Defendants) in federal district court in Great Falls, Montana. [50] TransCanada Keystone Pipeline, LP (TransCanada) joined the case as Defendant-Intervenor.[51] The subject of this action was allegations that the State Department violated the Administrative Procedure Act (APA), the National Environmental Policy Act (NEPA), and the Endangered Species Act (ESA) when it published its Record of Decision and National Interest Determination in conjunction with the issuance of a Presidential Permit to allow TransCanada to build an international pipeline crossing the United States-Canadian border.[52]

Executive Order 13337 delegates the President's authority to issue permits for the construction of a cross border pipeline to the State Department.[53] The State Department may only issue a construction permit if it determines that granting the permit "would serve the national interest."[54] The Keystone XL pipeline at issue in this case; would transport 830,000 barrels of crude oil per day from Albert, Canada and the Bakken shale formation in Montana to Steele City, Nebraska. [55] This proposed pipeline is an extension of the Keystone Pipeline system currently in place.[56]

TransCanada first applied for a Presidential Permit in September 2008.[57] The State Department recognized that the issuance of a permit would constitute a major federal action, which would trigger a required environmental analysis under NEPA. [58] Maintaining the position of lead agency, the State Department began a NEPA analysis and

[50] *Indigenous Environmental Network v. United States Department of State*, No. CV-17-29-GF-BMM, 2017 WL 5632435, at *1-11 (D. Mont. 2017).
[51] *Id*.
[52] *Id*.
[53] *Id*.
[54] *Id*.
[55] *Id*.
[56] *Id*.
[57] *Id*.
[58] *Id*.

issued a draft environmental impact statement (EIS) in April 2010 and a final EIS in August 2011.[59]

Shortly after the final EIS was issued Congress passed the Temporary Payroll Cut Continuation Act of 2011, which required the State Department to make the decision on whether or not to issue a Presidential Permit to TransCanada within sixty days.[60] The State Department decided to deny TransCanada a Presidential Permit because it determined that sixty days was insufficient to evaluate the potential environmental impacts of the proposed Keystone XL Pipeline.[61]

After the first denial TransCanada submitted a new permit application on May 4, 2012 and the State Department once again began a review of potential environmental impacts.[62] During the course of this second review, the State Department issued a final Biological Assessment (BA) to the U.S. Fish and Wildlife Service (FWS) and released its Final Supplemental Environmental Impact Statement (FSEIS). [63] After receiving the Biological Statement, the FWS issued its Biological Opinion ("BiOp") and concurrence regarding the pipeline. [64] The second Presidential Permit application submitted by TransCanada was denied by Secretary of State John Kerry on November 2, 2015, after he determined that the pipeline did not meet the national interest requirement of Executive Order 13337.[65]

After the change in presidential administrations, President Donald Trump sought to expedite the approval of a Presidential Permit for the Keystone XL Pipeline by issuing a memorandum on January 24, 2017.[66] President Trump's memorandum invited TransCanada to apply a third time for a Presidential Permit, delegated the President's authority to issue the permit within sixty days, and stated that the State Department should consider the FSEIS to satisfy all applicable NEPA requirements and any other provision of law that would require consultation or review, including review required under Section 7(a) of the Endangered Species Act.[67]

TransCanada applied a third time for a Presidential Permit on January 26, 2017 and the State Department relying on the 2014 FSEIS and the 2013 BiOp, published a Record of Decision, and National Interest Determination, and issued a Presidential Permit to TransCanada. [68] There was no supplement to, or revision of, the 2013 or 2014 documents used by the State Department.[69]

Plaintiffs asked the court for a declaration that the defendants violated NEPA, ESA, and the APA and for a permanent injunction prohibiting TransCanada from beginning construction on the Keystone Pipeline. [70] Plaintiffs also sought for the federal government to 1) withdraw their FSEIS and pipeline approvals until achieving compliance with NEPA and 2) withdraw their BA and BiOp until complying ESA and APA.[71] Defendants moved to have all of Plaintiff's claims dismissed under Rules 12(b)(1) and 12(b)(6) of the Federal Rules of Civil Procedure.[72]

NEPA Claims Against Federal Defendants

The court reasoned that it had jurisdiction to review alleged NEPA violations under the provisions of the APA that waive the government's sovereign immunity and provide a private cause of action.[73] Under the APA, for a party to have standing there must exist injury in fact, ripeness, and redressability, the court found Plaintiffs to have met all three of the requirements.

[59] *Id*.
[60] *Id*. at *2.
[61] *Id*.
[62] *Id*.
[63] *Id.*
[64] *Id*.
[65] *Id*.
[66] *Id*.
[67] *Id*.
[68] *Id.*
[69] *Id*.
[70] *Id*.
[71] *Id*.
[72] *Id*. at *3.
[73] *Id*.

The court further reasoned that the actions of the State Department through its reviews in accordance with NEPA, demonstrate that it intended for the Record of Decision and the National Interest Determination, published concurrently with the issuance of the Presidential Permit, to constitute final agency action that is clearly reviewable under the APA. [74] The actions taken by the State Department are viewed by the court as agency action because the power was delegated by the President to the agency.[75] This delegation of power made the publication of those documents clearly reviewable under the APA and subject to the NEPA standards created by Congress.[76] As such, the State Department was required to comply with all NEPA requirements and could not shield itself from them through claims of foreign policy or national security.[77] The State Department's failure to revise or supplement the 2013 and 2014 documents constituted a violation of NEPA.

ESA and APA Claim Against FWS and Federal Defendants

Plaintiffs claimed that Defendants violated the ESA and the APA; Defendants moved to dismiss the claims, alleging that Plaintiffs failed to state a claim pursuant to Rule 12(b)(6).[78] The court found that once again that Plaintiffs had met the three standing requirements of injury in fact, ripeness, and redressability.

Plaintiffs alleged that the FWS failed to analyze Keystone Pipeline XL's risks to endangered and threatened species in the path of the proposed pipeline.[79] Species affected by the Pipeline include, the endangered black-footed ferret, northern swift fox, whooping crane, interior least tern, pallid sturgeon, American burying beetle, threatened piping plover, and the northern long-eared bat.[80] Plaintiffs alleged that its members value these species, have studied and observed them in the wild, and would continue to do so. [81] Any effect on the member's ability to enjoy these species constitutes an injury-in-fact. [82] Plaintiffs catalogued violations of the ESA committed by Defendants and how each violation harmed specific species. [83] The court found that the Plaintiff's claims were enforceable under the APA and that there were sufficient facts to proceed with a claim against the defendants.[84]

Conclusion

The court held that Plaintiffs had standing to bring claims against the State Department, the FWS, and other Federal agencies for their failure to comply with the requirements of NEPA, the APA, and the ESA when determining whether to issue TransCanada a Presidential Permit to construct the Keystone XL Pipeline.[85] The court denied Defendants motion to dismiss and cleared the path for this claim to proceed.

—No. CV-17-29-GF-BMM, 2017 WL 5632435 (D. Mont. 2017).

b. Utilities and Infrastructure

The Montville-Whippany Transmission Project

Bryton Weathers

On March 27, 2015, Jersey Central Power and Light, ("JCP&L" or "Company") filed a petition with the New Jersey Board of Public Utilities ("BPU" or "Board") under N.J.S.A. 40.550-19 of the New Jersey Municipal Land Use Law ("MLUL") seeking a determination that the Montville-Whippany Transmission Project ("Project") and all facilities involved in the Project were reasonably necessary for the service, convenience or welfare of the public.[86] On August 10, 2017, Administrative Law Judge Leland McGee concluded based on his initial decision that the petition should be granted. [87] But, on September 15, 2017, Wildlife Preserves, Inc. ("WPI") filed an exception to the initial decision stating that:

> The Project would build transmission towers parallel to existing towers and expand JCP&L's Right-of-way ("ROW"), these additional towers are unnecessary

[74] *Id*.
[75] *Id*. at *5.
[76] *Id*.
[77] *Id*. at *6.
[78] *Id*. at *9.
[79] *Id*. at *10.
[80] *Id*. at *9.
[81] *Id*.
[82] *Id*. at *10.
[83] *Id*. at *12.
[84] *Id*. at *10.
[85] *Id*. at *12.
[86] *In the matter of the petition of Jersey Central power & Light Company pursuant to N.J.S.A. 40:55d-19 for a determination that the Montville-Whippany 230 KV Transmission Project is reasonably necessary for the service, convenience or welfare of the public*, OAL Docket No. PUC 08235-15 and BPU Docket No. EO 15030383 (Order dated November 21, 2017) at 1.
[87] *Id*. at 83-84.

> and harmful to the ecosystem[,] and the new line would run through several areas that are populated by endangered animals, including Bald Eagles, the oldest tree in Parsippany-Troy Hills, and 29 acres of wetlands.[88]

WPI asked the Board to return the matter to the Office of Administrative Law ("OAL") for a hearing on its proposed alternative to replace the existing poles with monopoles for 230 kV and 115 kV, O-93 and 34.5 kV circuits.[89]

On September 22, 2017, JCP&L disputed WPI's contention that the Project is in violation of the N.J.S.A. 40.55D-19 due to environmental impact [90], arguing that environmental impact from a Project is only one element under consideration for Board approval.[91] JCP&L further stated that the proposed route has the lowest impact to the environment of all the route alternatives and that it will comply with all applicable environmental regulations, requirements and mitigations per the testimony of Kirsty M. Cronin, a principal Environmental Scientist with The Louis Berger Group, Inc.[92]

Cronin testified that in addition to the Petition before the Board, JCP&L would also be applying to various agencies for the following approvals and authorizations to proceed with the Project:

> 1. NJDEP Division of Land Use Regulation ("DLUR" Freshwater Wetland Letter of Interpretation ("LOI"); 2. NJDEP DLUR Freshwater Wetlands and Flood Hazard Area Control Act Permits; 3. NJDEP Division of Water Quality Stormwater Construction Permit Requests for Authorization ("RFA"): Construction Activities (5G3); 4. New Jersey Department of Transportation Highway Occupancy Permit; 5. Morris County Soil Conservation District Certificate of Soil Erosion and Sediment Control ("SESC"); and 6. New Jersey State Historic Preservation Office Approval.[93]

The plans for the project will result in both permanent and temporary impacts to freshwater wetlands, transition areas and riparian areas.[94] The permanent impacts include placement of structure foundations within regulated areas and changes to existing wetlands (i.e., conversion of a forested wetland to a scrub-shrub wetland).[95]

The temporary impacts include tree clearing required for construction, operation and installation of a transmission line in scrub-shrub, or emergent wetlands. JCP&L's preferred route minimizes environmental impacts.[96]

All of the proposed routes were examined for the impact each would have on the environment using publicly available data including from the U.S. Fish and Wildlife Service's Wetlands Mapper, and data on streams, conservation lands, potential threatened and endangered species habitat, floodplain information, soil information, and aerial imagery.[97]

JCP&L's need for the project was in response to a potential voltage collapse risk in the Greystone, Montville, Whippany, and Riverdale areas with a potential loss of 400 MW of load affecting over 86,000 customers.[98] The project would mitigate this potential situation.[99]

JCP&L considered a 115 kV circuit between the Whippany and Montville substations as an alternative to the proposed Project. [100] However, the consideration would require substantial upgrades in both substations to accommodate the 115 kV tie-ins because the substations were not equipped for that voltage. [101] Lawrence A Hozempa, a supervisor for Transmission Planning in the Energy Delivery Planning and Protection Department for FirstEnergy Service Company, indicated that demand response would not provide sufficient load shed to accommodate the 400 MW potential loss.[102]

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[88] *Id*. at 91.
[89] *Id*. at 91-92.
[90] *Id*. at 98.
[91] *Id*.
[92] *Id*.
[93] *Id*. at 40.
[94] *Id*. at 42.
[95] *Id*.
[96] *Id*.
[97] *Id*. at 42-43.
[98] *Id*. at 103.
[99] *Id*.
[100] *Id*.
[101] *Id*.
[102] *Id*.

The Board found that JCP&L met its burden of proof and has shown that constructing the Project to address the Category C violation "is reasonable and necessary for the service, convenience or welfare of the public" pursuant to N.J.S.A. 40.55D-19.

Bat migration and mines

Kaitlin Allen

All forms of energy production have some level of effect on the environment and wildlife. Coal in particular has been noted for its large environmental impact.[103]

Predominantly, criticisms of coal production have focused on its effects on humans.[104] Pollution created by coal mining can negatively impact air and water quality, which poses problems in areas with large coal mining operations.[105] However, coal mining affects more than just the quality of the water and the air.[106] Mines have become vital habitats for bat populations.[107] Mine closures in recent years have led to the destruction of these habitats.[108] Many of the species of bats affected by the closures are endangered.[109] While there has been an effort in recent years to reduce the impact of mine closures on bat populations, these protections have not gone far enough, and bats continue to be negatively impacted.

Bats traditionally roost in caves.[110] However, deforestation and increased human activity in caves have forced bats to take up residence in mines.[111] Bats use mines for hibernation during the winter months and as a habitat.[112] Therefore, closures of mines can deeply affect bats.[113] The loss of a single mine that is being used by bats can have impacts in multiple states and for thousands of miles.[114] Unfortunately, before awareness was brought to the importance of mines to bats, mines were often closed without conducting environmental impact studies to determine whether bats were present inside.[115] There are two negative impacts of sealing mines with a known bat presence.[116] First, sealing destroys a habitat utilized by bats during migration.[117] Second, sealing can lead to bats being trapped inside the mines and perishing because they cannot get out.[118] In one instance in Michigan, over one million bats were found in a mine that was set to be closed.[119] It was the second largest population of hibernating bats in North America.[120] In New Jersey, 20,000 brown bats were sealed inside a mine in 1989.[121] Luckily their presence was discovered in time to reopen the mine, and the bats were saved.[122]

Coal Industry and Bat Gates

Coal mining makes up a significant portion of the United States' energy production.[123] There are two types of coal mining: surface and underground.[124] Surface mining occurs when coal is less than 200 feet below the surface of the earth and is the predominant method of mining today in the United States.[125] The United States produced 627 million tons of coal in 2016.[126] Recently however, coal production has decreased due to factors such as increasing environmental regulation and higher availability of natural

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[103] *Coal and the Environment,* US ENERGY INFORMATION ADMINISTRATION, https://www.eia.gov/energyexplained/index.cfm?page=coal_environment (last visited Apr. 7, 2018).
[104] EarthTalk, *How Coal Kills,* SCIENTIFIC AMERICAN (Feb. 17, 2015) https://www.scientificamerican.com/article/how-coal-kills/.
[105] *See* Adrienne Schmidt, *The effects of coal mining on health in Appalachia: global context and social justice implications* (2014) (Honors Theses).
[106] *See Bats and Mines*, BAT CONSERVATION INTERNATIONAL, INC. (1998), https://www.batcon.org/pdfs/batsmines/batsmines_01-08.pdf.
[107] *Id.*at 7.
[108] *See Threatened and Endangered Species,* https://www.abandonedmines.gov/threatened-species (last visited Apr. 8, 2018).
[109] BAT CONSERVATION AND MINING: A TECHNICAL INTERACTIVE FORUM (Kimery C. Vories & Anna Harrington 2000).
[110] *Bats and Mines*, *supra* note 106, at 7.
[111] *Id.*
[112] *Id.*
[113] *Id.*
[114] *Id.*
[115] *Id.*
[116] Michael Herder, *Monitoring the Effectiveness of Bat Compatible Mine Gates,* BUREAU OF LAND MANAGEMENT, Jun. 2000, https://www.blm.gov/nstc/resourcenotes/respdf/RN18.pdf.
[117] *Id.*
[118] *Id.*
[119] Bats and Mines, *supra* note 106.
[120] *Id.*
[121] Jacqueline J. Belwood & Rachel J. Waugh, *Bats and Mines: Abandoned Does Not Always Mean Empty,* BATS MAGAZINE, 1991, http://www.batcon.org/resources/media-education/bats-magazine/bat_article/493.
[122] *Id.*
[123] *Americans use many types of energy,* U.S. ENERGY INFORMATION ADMINISTRATION, https://www.eia.gov/energyexplained/?page=us_energy_home (last visited Apr. 7, 2018).
[124] *Coal Mining Technologies,* TRIBAL ENERGY AND ENVIRONMENTAL INFORMATION, https://teeic.indianaffairs.gov/er/coal/restech/tech/ (Last visited Apr. 8, 2018).
[125] *Id.*
[126] *Coal Mining,* WORLD COAL ASSOCIATION, https://www.worldcoal.org/coal/coal-mining (last visited Apr. 8, 2018).

gas.[127] The decrease in coal production has increased the focus on the number of abandoned mines. [128] It is estimated that there are over 500,000 abandoned mines in the United States.[129] It is unclear how many of those are coal mines. However, the Appalachian Citizen's Law Center claims that there are over 9 billion dollars' worth of abandoned coal mines in the United States.[130]

Abandoned coal mines are dangerous to the environment for several reasons.[131] The debris left behind constitutes a fire risk, and there are often pollutants left inside that could find their way into the water stream. [132] 60% of abandoned coal mines are located in West Virginia, Pennsylvania and Kentucky.[133] The government has made cleaning up these minds a priority to avoid environmental issues, and has also sought to protect humans from the dangers inside by closing the entrances. [134] Cleaning up old coal mines has become increasingly difficult because many of the companies who operated them have since gone bankrupt.[135] Most abandoned mines however are found on state land.[136] Responsibility for cleaning up mines has been split between the federal government, the states, and Native American tribes.[137] At the federal level, the Office of Surface Mining Reclamation and Enforcement (OSMRE) in the Department of Interior is responsible for trying to clean up abandoned coal mines.[138] The Office was created in 1977 by the Surface Mining Control and Reclamation Act. [139] In 1998, OSMRE and Bat Conservation International signed a Memorandum of Understanding stating that bat conservation would be considered in the process of reclaiming abandoned mines.[140] It also stated that the federal government would make recommendations to the tribes and the states about bat preservation methods.[141]

Mines that are abandoned are required to be sealed by the federal government in order to protect miners.[142] The most cost effective way to seal a mine is through "blasting, plugging, backfilling, and other permanent solutions."[143] Other advantages of permanently sealing a mine include preventing the escape of poisonous gases, preventing polluted water from draining from the mine, and minimizing oxidation inside the mine, in addition to preventing humans from entering.[144] However, permanent closures prevent bats from moving through the mines and can often trap bats inside with no way to get out.[145] There has been a movement in recent years to put up bat friendly gates in abandoned mines rather than a more permanent closure. [146] In 2005, of the approximately 33,000 abandoned mines that had been closed in the United States, an estimated 1,200 had been closed with bat gates to attempt to preserve the bat habitats inside.[147]

While providing bats more protection than traditional closures, these gates are not a perfect solution.[148] There has been very little research into the long term impacts of gating mines on bat populations[149] There are also several issues with data collection when it comes to conducting this type of analysis.[150] However, the studies that have been done have shown that the presence of bat gates may

[127] Charles D. Kolstad, *What is Killing the US Coal Industry,* STANFORD INSTITUTE FOR ECONOMIC POLICY RESEARCH, Mar. 2017, https://siepr.stanford.edu/research/publications/what-killing-us-coal-industry.

[128] *Why cleaning up abandoned coal mines is so important – and difficult,* PBS NEWS HOUR, Nov. 28, 2016, https://www.pbs.org/newshour/show/cleaning-abandoned-coal-mines-important-difficult.

[129] *Introduction,* https://www.abandonedmines.gov/ep.html (last visited Apr. 7, 2018).

[130] *Abandoned Mine Land Policy,* APPALACHIAN CITIZEN'S LAW CENTER, https://appalachianlawcenter.org/abandoned-mine-land-policy/ (last visited Apr.8, 2018).

[131] *Why cleaning up abandoned coal mines is so important – and difficult, supra* note 128.

[132] *Id.*

[133] *Coal Mines,* https://www.abandonedmines.gov/about_coal_mines (last visited Apr. 8, 2018).

[134] *Introduction, supra* note 129.

[135] *Why cleaning up abandoned coal mines is so important – and difficult, supra* note 128.

[136] *Coal Mines, supra* note 133.

[137] *See Id.*

[138] *Id.*

[139] *Id.*

[140] INDIANA BAT & COAL MINING: A TECHNICAL INTERACTIVE FORUM (Kimery C. Vories & Anna Harrington eds. 2004) https://www.osmre.gov/resources/library/proceedings/2004IndianaBatCoalMiningForum.pdf.

[141] *Id*.

[142] 73 Fed. Reg. 21182; 30 C.F.R. § 75.1711 (2018).

[143] Herder, *supra* note 116.

[144] CHRISTIAN WOLKERSDORFER, WATER MANAGEMENT AT ABANDONED FLOODED UNDERGROUND MINES 76 (2008).

[145] Herder, *supra* note 116.

[146] *See,* Richard E. Sherwin, J. Scott Altenbach, David L. Waldien, *Managing Abandoned Mines for Bats,* Bat Conservation International, http://www.batcon.org/pdfs/batsmines/BatsandMinesHdbook.pdf.

[147] Robert H. King, *Microclimate Effects from Closing Abandoned Mines with Culvert Bat Gates,* May 2004, https://www.blm.gov/nstc/library/pdf/BatGate1TN416.pdf.

[148] *See,* Abagail Tobin & Carol L. Chambers, *Mixed Effects of Gating Subterranean Habitat on Bats: A Review,* J. OF 81 WILDLIFE MANAGEMENT 1149 (2017).

[149] K.W. Grandinson, J.M. Diamond, G.F. Diamond, V.J. Tyler & M.R. Mesch, *Monitoring and Evaluating Results Of Bat Protection Efforts* (2016).

[150] Herder, *supra* note 116.

impact bat behavior and increase the amount of time and energy it takes the bat to exit and enter a mine.[151] This is crucial because bats often have just enough fat and energy stored to get through the winter.[152] Additionally, the addition of gates can change the temperature and climate of the caves.[153] These changes can make the mines unsuitable for bats even though they can access them because bats are very sensitive to climate changes in their habitats.[154]

THERE HAS BEEN LITTLE RESEARCH INTO THE LONG TERM IMPACTS OF GATING MINES ON BAT POPULATIONS.

Determining whether there is a bat presence in a mine is no easy task.[155] There are two primary ways to determine if bats are using a cave as a habitat, internal and external surveys.[156] Surveys should be conducted well before the mine is closed.[157] Oftentimes these abandoned sites are not safe for humans to enter which can make collecting data more difficult.[158] It can be made even more difficult by the fact that less accessible mines often serve as the most ideal bat habitats, and require extra attention.[159] In areas that are simply inaccessible, internal surveys should be conducted in combination with observation of mine entrances.[160]

Importance of Bats and Protection Efforts

Bats are critically important to the environment.[161] They are a predator of many types of insects and therefore serve as a check on their populations.[162] Many of these insects are agricultural pests for which population control is extremely important.[163] Bats also contribute to pollination of plant species.[164] There are four major factors causing the decline of bat species: 1) loss of places to hibernate undisturbed, 2) the onset of a disease known as white nose syndrome which is caused by a fungus found in caves, 3) wind turbines, and 4) climate change.[165]

It is essential that environmental studies of mines be conducted to make sure that closing a mine will not have a negative impact on the bat population. Currently, the Bureau of Land Management installs bat grates in mines that have documented bat populations through its Bats and Mines Program.[166] Today, over 1,000 former mines serve as sanctuaries for bats.[167] The sanctuaries have even been successful in keeping some species of bats off the endangered list.[168]

Many of the bats affected by the closure and sealing of mines are endangered or protected.[169] The Endangered Species Act prohibits harming species within the United States that have been classified as endangered.[170] The act defines take as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."[171] The Supreme Court in *Babbitt v. Sweet Home* interpreted the definition of take to include "significant habitat modification."[172] In 1996, the U.S. Fish and Wildlife Service (FWS) issued a Biological Opinion ("BiOp") stating that the reclamation efforts being undertaken were not likely to harm any endangered species.[173] However, the BiOp also requires as a part of the permit process that potential impacts on endangered species be disclosed, and that a finding be made that the

[151] Grandinson, *supra* note 149.
[152] Douglas H. Chadwick, *A Mine of Its Own,* SMITHSONIAN May 2004, https://www.smithsonianmag.com/science-nature/a-mine-of-its-own-100250566/.
[153] Tobin, *supra* note 148, at 1156.
[154] *Id.*
[155] Bats and Mines, *supra* note 106, at 17.
[156] *Id.*
[157] *Id.*
[158] *Id.*
[159] *Id.*
[160] *Id.*
[161] *Bats Are Important,* BAT CONSERVATION INTERNATIONAL, http://www.batcon.org/why-bats/bats-are/bats-are-important (last visited Apr. 8, 2018).
[162] *Id.*
[163] *Id.*
[164] *Id.*
[165] *Threats to Bats*, NATIONAL PARK SERVICE, https://www.nps.gov/subjects/bats/threats-to-bats.htm (last visited Apr. 8, 2018).
[166] Chadwick, *supra* note 152.
[167] *Id.*
[168] *Id.*
[169] BAT CONSERVATION AND MINING: A TECHNICAL INTERACTIVE FORUM, *supra* note 109.
[170] *See* Endangered Species Act, 16 U.S.C. §§ 1531-1544.
[171] *Id.* at § 1538.
[172] *Babbitt v. Sweet Home Chapter of Cmtys. for a Great Or.*, 515 U.S. 687, (1995).
[173] Memorandum from the Assistant Director of Ecological Services to the Acting Director, Office of Surface Mining Reclamation and Enforcement (Sept. 24, 1996) https://www.fws.gov/ecological-services/es-library/pdfs/96_US_OSM.pdf.

harm is not likely to come to the endangered species or its habitat as a result of the activity.[174]

The Range-wide Indiana Bat Protection and Enhancement Plan Guidelines were created by FWS, OSMRE, and members of the Interstate Mining Compact Commission to assist mining companies in getting permits when their activities might impact the Indiana bat, an endangered species.[175] The current guidance states that "The applicant may consider choosing to install a bat gate over a portal if a survey indicates that bats use the portal and the portal and/or bat gate do not pose a risk to human health and safety." [176] Currently, under the guidance individuals are prohibited from destroying a known or potential habitat of the Indiana bat.[177] Companies have three options if they want to conduct activities within a potential habitat of the bat: 1) assume that the bats are present and comply with a Protection and Enhancement Plan, 2) conduct a bat survey to try and determine if the Indiana bat is using the habitat, or 3) show that the activity will have no adverse effect on the bat.[178] Enforcing habitat modification guidelines such as these is necessary to save bat populations.

Bats are crucial for the sustainability of our ecosystem.[179] The closing of coal mines has had unacceptable effects on bat populations, many of which are endangered.[180] Bat gates are a step in the right direction, but the studies have not been conducted to determine the best possible gates and methods for preserving bats.[181] Closing this information gap is critical to their survival and will help balance the needed protection for humans with the needed protections for bats.

II. Wildlife and Renewable Energy

a. Solar

A Growing Controversy: Are Solar Facilities Benefiting Birds or Burning Them?

Brittney Ellis

Currently, about two-thirds of the electricity used in the United States comes from burning coal, oil, and natural gas.[182] Solar energy is becoming more price-competitive, however, and is one of the most efficient ways to produce electricity without releasing carbon pollution.[183] In spite of this, many are worried about the effects of solar energy facilities on birds and other wildlife.[184] Government agencies and others who have conducted studies on the subject have used a range of methods to collect and present data.[185] This has made it difficult to get a clear picture of how solar energy is impacting birds in comparison with other forms of energy production.

The Ivanpah solar tower located in California kills more birds than any other solar facility in the U.S.[186] The Ivanpah Plant is a thermal solar installation, also known as a concentrated solar installation.[187] The facility contains several mirrors that point to a central tower[188], and generates electricity "by focusing solar rays to transform a fluid into steam[, which] turns a turbine to power a generator."[189] While the exact number of birds killed as a result of solar energy remains unknown, because there is not enough data currently available.[190] However, it is estimated that the Ivanpah facility alone may cause the death of as many as 28,000 birds per year.[191]

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[174] *Id.* at 8-9.
[175] *Range-wide Indiana Bat Protection and Enhancement Plan Guidelines,* US Fish and Wildlife Services, https://www.fws.gov/frankfort/pdf/INBATPEPGuidelines.pdf.
[176] *Id.* at 10.
[177] *Id.* at 4.
[178] *Id.* at 6.
[179] *Bats are Important*, *supra* note 161.
[180] *See,* BAT CONSERVATION AND MINING: A TECHNICAL INTERACTIVE FORUM, *supra* note 169.
[181] Grandinson, *supra* note 149.
[182] John Upton, *Solar Farms Threaten Birds*, SCIENTIFIC AMERICAN (Aug. 27, 2014), https://www.scientificamerican.com/article/solar-farms-threaten-birds/.
[183] Smithson-Stanley & Bergstrom, *Why Solar Power is Good for Birds,* AUDUBON (Jan 9, 2017), http://www.audubon.org/news/why-solar-power-good-birds.
[184] *Id*.
[185] Alan Neuhauser, *Pecking Order: Energy's Toll on Birds*, U.S. NEWS & WORLD REPORT (Aug. 22, 2014), https://www.usnews.com/news/blogs/data-mine/2014/08/22/pecking-order-energys-toll-on-birds.
[186] Smithson-Stanley & Bergstrom, *supra* note 183.
[187] Neuhauser, *supra* note 185.
[188] *Id*.
[189] *Id*.
[190] Sammy Roth, *How Many Birds are Killed by Solar Farms?,* DESERT SUN (Aug. 17, 2016), https://www.desertsun.com/story/tech/science/energy/2016/08/17/how-many-birds-killed-solar-farms/88868372/.
[191] Neuhauser, *supra* note 185.

Bird deaths at solar facilities are often attributed to the "lake effect"[192] through which birds mistake solar facilities for bodies of water and land on them.[193] When the birds fly too close to the solar panels they are either burned to death, killed on impact when they hit the ground, or eaten by a predator after hitting the ground.[194] Solar companies have been active in attempting to mitigate bird deaths by powering down bright lights, switching to LEDs, and using nets to keep birds away.[195] A federal report recommends that facilities go even further.[196] Recommended mitigation techniques include clearing vegetation around solar towers, retrofitting panels and mirrors with designs to help birds realize the solar panels are not water, suspending operations at key migration times, and preventing birds and bats from roosting and perching at the facilities.[197]

ALTHOUGH SOLAR ENERGY BENEFITS BIRDS INDIRECTLY BY PRODUCING CLEAN ENERGY, CERTAIN FACILITIES CAUSE MANY BIRD DEATHS EACH YEAR.

In 2014, the Center for Biological Diversity (CBD) filed a notice of intent to sue the U.S. Department of the Interior, alleging that the agency had failed to protect yumer clapper rails from being killed by large-scale solar projects in the California and Arizona deserts.[198] The yumer clapper rail is a marsh bird listed under the Endangered Species Act (ESA). [199] Two birds were found dead at solar power facilities in 2014 and CBD contended that this constituted an illegal "take" of the species under the ESA because the agency failed to minimize or mitigate the impacts of solar energy facilities within the bird's migration corridor.[200] The CBD has not yet filed the lawsuit at the time of this article.

Litigation over bird deaths at solar plants may be slowed by the Trump administration's change of a prior interpretation of the Migratory Bird Treaty Act (MBTA).[201] A solicitor's opinion released in December 2017 by the Department of the Interior may alter the way that the MBTA is applied.[202] The opinion rejects the strict liability requirement of the MBTA in favor of a more permissive reading that allows incidental take of migratory birds.[203] This will likely mean that the Department will no longer prosecute oil and gas, wind, and solar operators that accidently kill birds.[204] The National Audubon Society has expressed concerns that the reversal will make energy operators less likely to invest in precautionary measures to protect birds.[205] Energy groups, however, have praised the new interpretation as a "common-sense approach [that will] ensure[] that lawful activities are not held hostage to unnecessary threats of criminalization."[206]

The new interpretation of the MBTA may curb litigation against solar plants over bird deaths.[207] However, several other statutes still exist to provide protection for birds including the ESA and the Bald and Golden Eagle Protection Act.[208] Although solar energy benefits birds indirectly by producing clean energy, certain solar facilities cause many bird deaths each year. Therefore, it is unlikely that the controversy surrounding bird deaths at solar facilities will end any time soon.[209]

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[192] Upton, *supra* note 182.
[193] *Id.*
[194] *Id.*
[195] *Id*.
[196] Upton, *supra* note 182; Leroy J. Walston et. al., *A Review of Avian Monitoring and Mitigation Information at Existing Utility-Scale Solar Facilities,* U.S. DEP'T OF ENERGY (Apr. 2015), http://www.evs.anl.gov/downloads/ANL-EVS_15-2.pdf.
[197] Upton, *supra* note 182.
[198] *Lawsuit Launched to Protect Endangered California Birds From Large-scale Desert Solar Projects,* CENTER FOR BIOLOGICAL DIVERSITY (Aug. 21, 2014), http://www.biologicaldiversity.org/news/press_releases/2014/yuma-clapper-rail-08-21-2014.html.
[199] *Id*.
[200] *Id.*
[201] Juliet Eilperin, *Trump administration eases rule against killing birds***,** THE WASHINGTON POST (December 26, 2017), https://www.washingtonpost.com/politics/trump-administration-eases-rule-against-killing-birds/2017/12/26/1be9afe6-ea72-11e7-9f92-10a2203f6c8d_story.html?utm_term=.bf6c111cbd07.
[202] *Id.*
[203] U.S. Dept. of Interior*, M-37050 The Migratory Bird Treaty Act Does Not Prohibit Incidental Take* (Dec. 22, 2017), https://www.doi.gov/sites/doi.gov/files/uploads/m-37050.pdf.
[204] Eilperin, *supra* note 201.
[205] *Id.*
[206] *Id.*
[207] *Id.*
[208] *Id.*
[209] *Id.*

Case Brief: *La Cuna De Aztlan Sacred Sites Protection Circle Advisory Commission v. U.S. Dep't of Interior*

Brittney Ellis

La Cuna De Aztlan Sacred Sites Protection Circle Advisory Committee, Californians for Renewable Energy, and individual members from both organizations brought suit against federal officials and agencies to block the construction of solar projects on federal public land in California.[210] Plaintiffs alleged violations of The Energy Policy Act of 2005 (EPAct), the National Historic Preservation Act (NHPA), and the National Environmental Policy Act (NEPA).[211] The U.S. District Court for the Central District of California dismissed the claims and Plaintiffs appealed in the Ninth Circuit.[212]

Plaintiffs alleged that Defendants violated the EPAct by causing harm to environmental and cultural resources at the project site. The court dismissed Plaintiffs' claim under EPAct for failure to establish standing.[213] The court found that Plaintiffs did not provide supporting facts for the allegation that the project would not have gone forward without the federal loan guarantee. Therefore, the allegation was not "fairly traceable" to their alleged injury of suffering harm to environmental and cultural resources.[214]

Plaintiffs further alleged that the Bureau of Land Management (BLM) approved solar projects that would cause harm to sacred Native American sites without first consulting with Native American tribes under NHPA.[215] The Court stated several reasons why Plaintiffs failed to state a claim under NHPA.[216] First, a plaintiff who was a tribal monitor for the Fort Mojave Indian Tribe was found to not have standing under NHPA because the regulations only require the government to consult with federally recognized tribes, not individual members of the tribe.[217]

Plaintiffs also failed to state a claim under NHPA because the federal agency provided adequate opportunities for public involvement as required under NEPA. "[W]hile a federal agency is required to provide adequate opportunities for public involvement, the agency may "use [its] procedures for public involvement under [NEPA] or other program requirements in lieu of [the NHPA's] public involvement requirements."[218] Therefore, because the agency complied with NEPA it was not required to comply with the NHPA's public involvement requirements.[219]

The court also found that Plaintiffs had failed to make a claim under NEPA, even assuming standing. Agencies are required to prepare a supplemental environmental impact statement (EIS) if a new proposal or information "will have a significant impact on the environment in a manner not previously evaluated and considered."[220] Although Plaintiffs alleged that the original EIS did not "evaluate and consider the Project's impacts on cultural resources and the kit fox," they failed to make the claim that BLM should have prepared a supplemental environmental impact statement.[221]

The Ninth Circuit affirmed the decision of the district court.[222] Plaintiffs appealed to the U.S. Supreme Court. On June 6, 2016 the Supreme Court denied certiorari.[223]

—642 F. App'x 690 (9th Cir. 2016).

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[210] *La Cuna De Aztlan Sacred Sites Prot. Circle Advisory Comm. v. U.S. Dep't of Interior*, 642 F. App'x 690, 692 (9th Cir. 2016).
[211] *Id*; 42 U.S.C. §§ 16512, 16516; 54 U.S.C. § 306108; 42 U.S.C. §§ 4321–4370h.
[212] 642 F. App'x at 692.
[213] *Id.*
[214] *Id.*
[215] *Id.*
[216] *Id*; 54 U.S.C. § 306108.
[217] 642 F. App'x at 693; 36 C.F.R. § 800.2(c)(2).
[218] *Id.*; § 800.2(d)(3)
[219] *Id.*
[220] 642 F. App'x at 693 (citing *Westlands Water Dist. v. U.S. Dep't of Interior,* 376 F.3d 853, 873 (9th Cir.2004)).
[221] 642 F. App'x at 693.
[222] *Id*.
[223] *High Court Rejects Native Americans' Challenge To Solar Power Plant*, LEXIS LEGAL NEWS (June 6, 2016), https://www.lexislegalnews.com/articles/8857/high-court-rejects-native-americans-challenge-to-solar-power-plant.

b. Wind

The Tule Wind Project

Jackie Ignatowitz

In September 2004, the Bureau of Land Management (BLM) issued a right-of-way grant for Tule Wind LLC to conduct wind testing and monitoring at a proposed project location in southeastern San Diego County.[224] Over seven years later, in April 2012, BLM issued a right-of-way grant for Tule Wind "to construct, operate, maintain, and decommission a 186 megawatts (MW) wind energy project" on over 12,000 acres of public land.[225] The Tule Wind Project was set to include 62 wind turbines and connect to "the Boulevard Substation rebuild component of San Diego Gas & Electric's (SDG&E's) East County (ECO) Substation Project."[226] The power generated by the wind turbines was supposed to be enough to provide power to approximately 60,000 homes in the area.[227] In addition to the power provided to local homes, other goals and benefits of the project included: reducing CO_2 emissions, making the air cleaner and lowering dependence on oil; creating over 900 jobs for the duration of the construction and 39 jobs for the operational years; and generating $3.5 million in tax revenue annually for San Diego County.[228]

An Environmental and Construction Compliance Monitoring Program was designed for the project, as well as an Operations and Maintenance Environmental Compliance Monitoring Program, by BLM and Tule Wind.[229] The programs were designed to make sure that mitigation measures were taken for the protection of the environment.[230]

After clearing administrative and legal hurdles, the Tule Wind Project continued, and as of January 2018 – over thirteen years since the initial right-of-way grant was issued – is now producing electricity in San Diego's East County.[231] The farm is operated by Avangrid Renewables, an Oregon-based company that operates over 40 renewable energy projects currently generating power, and has been connected to a San Diego Gas & Electric substation.[232] However, the results of the project are different than what was initially planned. There are only 57 wind turbines in the Tule Wind Project that are 262 feet high and have three blades attached to rotors with a diameter of 351 feet.[233] The turbines are spread over a five-mile area and are connected by dirt roads, and there is enough electricity being generated to provide 40,000 homes with power instead of 60,000.[234] Over the next twenty-five years, only $39 million is expected to be generated in state and local tax benefits, and there are only eight people working full time at the project site.[235] However, the project will help California reach the clean-energy goals established under the California Renewable Portfolio Standard, which requires publicly owned utilities to acquire half of their electricity from renewable energy sources by 2030, and under the City of San Diego Climate Action Plan, which "requires annual emissions [to] be cut in half by 2035."[236]

The Tule Wind Farm is expected to expand with 24 new turbines after more permits are granted, and this expansion, Tule II, was approved by the California State Lands Commission.[237] The expansion plan includes the

[224] *Environmental and Construction Management Compliance Monitoring Program*, TULE WIND ENERGY PROJECT, www.tulewindeccmp.com/ (last visited April 5, 2018).
[225] *Id*.
[226] *Id*.
[227] *About Tule Wind*, AVANGRID RENEWABLES, www.avangridrenewables.us/tulewind/about/index.html (last visited April 5. 2018).
[228] *Id*.
[229] *Environmental and Construction Management Compliance Monitoring Program*, *supra* note 224.
[230] *Id*.
[231] Rob Nikolewski, *Tule Wind Farm now producing electricity*, THE SAN DIEGO UNION-TRIBUNE (Jan. 25, 2018), www.sandiegouniontribune.com/business/energy-green/sd-fi-tule-windfarm-20180125-story.html.
[232] *About Tule Wind*, *supra* note 227.
[233] Nikolewski, *supra* note 231.
[234] *Id*.
[235] *Id*.
[236] *Id*.
[237] *Id*.

construction of seven turbines on state land and seventeen turbines on tribal land belonging to the Ewiiaapaayp Band of Kumeyaay Indians.[238] The Protect Our Communities Foundation (POC), which unsuccessfully tried to stop the first phase of the project in court,[239] sued to stop Tule II as well. In the first suit, the Court held that BLM fulfilled all of the National Environmental Policy Act's (NEPA) requirements and did not violate the Administrative Procedure Act by allowing Tule to operate with an eagle take permit.[240] Wind farms can put wildlife at risk, which is one reason why they are heavily opposed by groups such as POC.[241] Opponents of the project argue that wind farms in the area disrupt the land that big horn sheep occupy and the blades of the turbines endanger golden eagles and bats that fly through the air.[242] The executive director of POC, April Rose Sommer, called the project "ill-conceived," and said that it "will turn important golden eagle breeding territory into a graveyard for an iconic and protected species and destroy thousands of acres of pristine, wild desert."[243]

The second case, *Protect Our Communities Foundation v. Black*, filed in the Southern District of California, while about Tule II, dates back to 2011 when the BLM issued its Final Environmental Impact Statement (EIS).[244] The Bureau of Indian Affairs (BIA) also worked on the EIS, so it was able to use it when taking discretionary actions, and because the BIA has jurisdiction over tribal lands, it was responsible for consideration of Tule II.[245] The EIS stated that turbines would not be constructed in areas that presented too high of a risk towards golden eagles, and the BIA created an Avian and Bat Protection Plan.[246] The U.S. Fish and Wildlife Service and the California Department of Fish and Game sent memoranda to the agency expressing its concern over Tule II because it had the "high potential to result in injury or mortality of golden eagles…and the loss of golden eagle breeding territories," and recommended modifications to the project, such as eliminating the turbines on the tribal land and restricting the turbines during breeding season.[247] The BIA took several mitigation measures specifically designed for golden eagles, but did not adopt all of the recommendations it was given.[248] When making its decision regarding mitigation and the authorization of Tule II, "the BIA considered the EIS, the 'overall administrative record,' and 'BIA's mission to foster economic development for tribes."[249]

POC filed its complaint regarding Tule II in 2014, alleging three claims for relief: (1) that the BIA violated NEPA; (2) that the BIA violated BGEPA; and (3) that the BIA violated the Migratory Bird Treaty Act. Plaintiffs argued that the BIA violated NEPA "by relying on the 2011 EIS for BIA's subsequent approval of Tule II", that the BIA was required to "prepare supplemental NEPA review," and that the BIA "violated NEPA's public disclosure requirements."[250] Both Plaintiffs and Defendants moved for summary judgment on the issue of whether the BIA acted arbitrarily and capriciously and contrary to NEPA by approving the lease of the tribal land for Tule II.[251]

Plaintiffs argued that the EIS's determination that turbines should not be located in areas where the risk level to golden eagles exceeded an acceptable level compels the BIA to accept the risk level classification of other agencies.[252] However, the EIS specifically states the risk of each location "will be determined by the BLM or the appropriate land management agency."[253] Since the BIA has jurisdiction over the tribal land at issue in this case, it is up to the BIA to determine whether the risk is too high.[254] The BIA determined that the risk to the golden eagles was not significant when the mitigation measures were taken into account, so the Court was not persuaded by Plaintiffs' argument.[255]

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[238] *Id*.
[239] *See Protect Our Cmtys. Found. v. Jewell*, 2014 U.S. Dist. LEXIS 50698 (S.D. Cal. Mar. 25, 2014).
[240] *Id*.
[241] *About*, PROTECT OUR COMMUNITIES FOUNDATION, protectourcommunities.org/about/ (last visited April 2, 2018).
[242] Nikolewski, *supra* note 233; Nikolewski, *Tule Wind Project takes another step*, THE SAN DIEGO UNION-TRIBUNE (July 26, 2016), www.sandiegouniontribune.com/sdut-tule-wind-fight-2016jul26-story.html.
[243] Rob Nikolewski, *Tule wind project expansion clears legal hurdle*, THE SAN DIEGO UNION-TRIBUNE (Mar. 8, 2017), www.sandiegouniontribune.com/business/energy-green/sd-fi-tule-wind-20170308-story.html.
[244] *Protect Our Cmtys. Found. v. Black*, 240 F. Supp. 3d 1055, 1059 (S.D. Cal., Mar. 6, 2017).
[245] *Id*.
[246] *Id*.
[247] *Id*. at 1060.
[248] *Id*.
[249] *Id*.
[250] *Id*.
[251] *Id*. at 1061.
[252] *Id*. at 1063.
[253] *Id*.
[254] *Id*.
[255] *Id*. at 1064.

The next argument surrounds alternatives for both phases of the project.[256] First, Plaintiffs asserted that there was not "a reasonable range of alternatives" considered in the EIS for Tule II and that the EIS was not intended to be the "hard look" at alternatives.[257] The Court found this to be contradictory to the record and the language of the EIS because there were twelve alternatives and "the full range of potential environmental impacts and issues" were considered for the project.[258] Second, Plaintiff contended that analysis of the alternatives in the EIS was insufficient for Phase II "because it only considered zero- or eighteen-turbine builds and nothing in between."[259] The Court did not agree with this either. It found that the EIS included the possible impact on the environment and gave the BIA discretion to approve "all, none or part" of Tule II and provided a spectrum for the BIA to work in.[260] The Court also found that this argument is precluded by the exhaustion doctrine in NEPA, which is the principle that after a plaintiff fails to bring an issue to the agency's attention, it cannot attempt to have a decision vacated due to an agency's failure to consider the issue.[261] Because the plaintiff, or another interested party, did not object to the lack of alternatives prior to EIS – Plaintiffs did not object until filing suit – the argument is precluded.[262]

Another of Plaintiff's arguments is that the BIA, even if able to rely on the EIS, was obligated to prepare a supplemental NEPA review to address newer data and changes to the project.[263] However, new data would trigger a supplemental review only if the new information is significant, and the information the plaintiff provided about golden eagle fatalities and the risks the project presented to golden eagles and other birds was not significant because it only served to confirm "concerns that the 2011 EIS already articulated and considered."[264] The EIS carefully analyzed the impact and risks to the golden eagles and implemented the Avian and Bat Protection Plan.[265] Regarding the changes to the project, Plaintiff argued that EIS only addressed the construction of a maximum of eighteen turbines on the tribal ridgeline.[266] In actuality, the EIS considered a maximum of twenty turbines because two of the turbines were actually straddling the line of BLM and tribal land.[267] Therefore, the Court concluded that there was neither significant new information nor was there a substantial change in the action plan that would require a supplemental review.[268]

Plaintiff's final argument was that the BIA violated NEPA "by withholding from the public highly germane materials bearing on the environmental impacts of, and reasonable alternatives to, BIA's action in approving Tule Wind Phase II."[269] The Court found that the BIA did not violate any public disclosure requirements because it was a cooperating agency on the EIS which was made public, there was a notice and comment period, and the comments received were addressed in the final version of the EIS.[270]

The EIS gave the BIA discretion to approve Tule II, which it did, after considering relevant factors, explaining the rationale for its decisions, and being fully informed of the possible impact of the project on the environment and wildlife.[271] Therefore, the Court granted the defendant's motion for summary judgment.[272] POC has filed an appeal in the Ninth Circuit, but Tule II is expected to be completed in 2020 or 2021.[273] A senior business developer at Avangrid Renewables, Harley McDonald, has expressed the caution that has been taken regarding the project and the wildlife in the area.[274] McDonald has said that environmental studies were conducted over a several-year period to ensure the impact would be minimal and that wildlife and birds would be protected.[275]

c. Hydropower

Case brief: *Northwest Resource Information Center v. Northwest Power & Conservation Council*

Kayla Pederson

The Northwest Resource Information Center (NRIC) is a nonprofit whose mission is "to promote the ethic that

[256] *Id*.
[257] *Id*.
[258] *Id*.
[259] *Id*.
[260] *Id*. at 1065.
[261] *Id*. (citing *Vermont Yankee Nuclear Power Corp. v. Nat. Res. Def. Council, Inc*., 435 U.S. 519 (1978).
[262] *Id*.
[263] *Id*. at 1066.
[264] *Id*. at 1067.
[265] *Id*.
[266] *Id*.
[267] *Id*.
[268] *Id*. at 1068.
[269] *Id*.
[270] *Id*. at 1069.
[271] *Id*.
[272] *Id*.
[273] Nikolewski, *supra* note 231.
[274] *Id*.
[275] *Id*.

environmental quality and long-term economic productivity are synonymous." [276] In this case, NRIC sought review of the fish and wildlife program developed by the Northwest Power and Conservation Council (Council).[277] The Council was formed under the Northwest Power Act (Power Act) to create a regional plan to balance energy and environmental needs of the states impacted by the Columbia River.[278] The Power Act requires that "[t]he program shall consist of measures to protect, mitigate, and enhance fish and wildlife affected by the development, operation, and management of such facilities while assuring the Pacific Northwest an adequate, efficient, economical, and reliable power supply."[279] In order for the court to set aside the final actions of the Council, under the Administrative Procedure Act, such actions must be found to be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law."[280]

NRIC's first argument was that "the Council improperly equated its mandate under the Northwest Power Act (Power Act) with the substantive requirements of the Endangered Species Act (ESA)." [281] The U.S. Court of Appeals for the Ninth Circuit stated that this argument failed on two points [282] : First, there was several environmental measures "distinct from those included in the Federal Columbia River Power System biological opinions issued pursuant to the ESA."[283] Second, it was not improper for the Council to include "flow and passage measures related to anadromous fish."[284] These measures should be included because the Power Act states that the program should include measures that "complement the existing and future activities of the Federal and the region's State fish and wildlife agencies and appropriate Indian tribes."[285]

Second, NRIC argued that the Council rejected measures for improper reasons; specifically, the Nez Perce's Tribe's proposal to study dam removal along the Snake River.[286] The Council had previously considered the same proposal in a 2010 Power Plan but had determined that it was not economically feasible.[287] Another was a proposal by the state of Oregon and Nez Perce Tribe for an experimental dam spill. [288] The Council also rejected this proposal because it had "methodological problems" and could potentially violate the Clean Water Act. [289] The Ninth Circuit determined that the Council's decisions to reject proposals such as these were not arbitrary or capricious and, therefore, not improper.[290]

Next, NRIC argued that the decisions were arbitrary and capricious because the Council did not include mitigation measures up to the point that "the cost of such measures would threaten an "economical and reliable power supply" for the region."[291] Again, the Ninth Circuit saw no merit to this argument because there is no requirement that the Council adopt all mitigation efforts until the point that the economic and reliable power supply is threatened.[292]

NRIC's last argument was that the Columbia Basin Fish Accords—a set of agreements providing more certainty for hydropower generation while funding salmon restoration projects in the Columbia River Basin—improperly influenced the Program.[293] However, this was also found to be harmless because no evidence suggested that any member of the Council made any decision on what should be included in the Program based off obligations under the Accords.[294] At most, the Ninth Circuit writes, there could have been a misunderstanding but the Council members were given information on the "proper bases for including or rejecting recommendations" and that any misunderstanding prior had not impacted the overall program.[295]

The Ninth Circuit denied NRIC's petition because the arbitrary and capricious standard could not be met. This case was not published and "is not precedent except as provided by Ninth Circuit [Rule] 36-3."[296]

—704 F.App'x 630 (9th Cir. 2017).

[276] http://www.nwric.org
[277] *Nw. Res. Info. Ctr. v. Nw. Power & Conservation Council*, 704 F. App'x 630, 632–34 (9th Cir. 2017).
[278] https://www.nwcouncil.org/about/.
[279] 16 U.S.C.A. § 839b(h)(5).
[280] 5 U.S.C. §706(2)(A).
[281] 704 F. App'x at 633.
[282] *Id.*
[283] *Id.*
[284] *Id.*
[285] 16 U.S.C. §839b(h)(6)(A).
[286] 704 F. App'x at 633.
[287] *Id.*
[288] *Id.*
[289] *Id.*
[290] *Id.*
[291] *Id.* at 634.
[292] *Id.*
[293] *Id.*
[294] *Id.*
[295] *Id.*
[296] *Id.*

d. Geothermal

Geothermal energy and wildlife

Eftiola Greco

Introduction

Growing concerns over energy independence, climate change, water shortages, and pollution are all reasons to advocate for an in-depth analysis of geothermal resource development. Geothermal resources can be used in a variety of ways, ranging from small scale heating of single-family homes to commercial utilization in farming and agriculture.[297] While these resources have the potential to make significant contributions toward mitigating the negative consequences of non-renewable energy sources, geothermal development has also been criticized for degrading air (including noise), land (including soil erosion, seismic activity, and subsidence, wildlife habitat, and visual quality), and water quality.[298]

A. What is "Geothermal Energy"?

Geothermal energy comes from harnessing the heat contained below the earth's surface.[299] While most of the earth's energy is confined in its core and mantle, at depths unlikely to be tapped by any foreseeable drilling technology, economically feasible concentrations occur in hot spots known as "geothermal reservoirs."[300] There are three practical requirements imposed upon geothermal reservoirs slated for energy production: (1) relatively high temperature at a depth within the range of drilling technology; (2) sufficiently permeable rock that allows for heat transfer agents to flow continuously; and (3) sufficient water recharge to maintain production over many years.[301] Thus, while geothermal resources come in many forms,[302] these prerequisites have limited its utilization to hydrothermal energy (trapped hot water or steam).[303]

Hydrothermal energy can produce commercial electricity by using geothermally-heated fluid to turn a turbine connected to a generator.[304] Currently, there are three different ways to generate electricity from geothermally generated, hydrothermal energy: hot water, vapor-dominated, and binary systems.[305]

> Hot water systems are used when a developer finds geothermal fluids hot enough to produce electricity without the use of a secondary fluid. These liquids are piped to the surface where some of the water "flashes" into steam and powers turbines, thereby generating electricity. Vapor-dominated systems work the same way but are more efficient because steam found within the earth's surface is routed directly to the turbines to generate electricity. Lastly, binary systems are used when geothermal temperatures are not hot enough to produce enough steam to generate electricity. Geothermal fluids are brought to the earth's surface where the heat is transferred to a secondary fluid with a lower boiling point capable of producing steam at a lower temperature. After the heat is transferred, the secondary fluid produces steam that turns turbines.[306]

B. Geothermal Energy and the Public Trust Doctrine

Although the public trust doctrine has eluded a precise definition, the general idea behind it is that there are some resources, such as public lands, navigable waters, and wildlife, that are forever to be held in trust for present and future generations. The role of renewable energy in addressing the impacts of climate change on future generations by reducing pollution caused by existing, non-renewable energy sources, appears to be well-aligned with the ultimate goal of the doctrine. However, the consequences of renewable development projects have been at the center of many concerns raised by environmental groups.

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[297] Justin Plaskov, *Geothermal's Prior Appropriation Problem*, 83 U. COLO. L. REV. 257, 263 (2011).
[298] Peter F. Windrem &Gary L. Marr, *Environmental Problems and Geothermal Permitting*, 14 NAT. RES. L. 675 (1982).
[299] *See Geothermal Energy*, U.S. FISH & WILDLIFE SERV. ENERGY DEV., https://www.fws.gov/ecological-services/energy-development/geothermal.html (last updated Nov. 15, 2017).
[300] Raymond J. Werner, *Geothermal Leasing*, 54 OR. L. REV. 623 (1975).
[301] *See id*. at 624.
[302] *See* Plaskov, *supra* note 297, at 262.
[303] *Geothermal Energy*, *supra* note 299 (stating that hydrothermal energy is the only type of geothermal energy that has been widely developed).
[304] *Id*.
[305] *See* Plaskov, *supra* note 297, at 263.
[306] *Id*. at 263-43.

While early cases involving the common law public trust doctrine focused primarily on public navigation, commerce, and fishing as protected activities under the public trust doctrine,[307] by the 1980s, state courts began to include recreation, open spaces, wildlife, and wildlife habitat as activities and resources the state was obligated to protect.[308] Federal environmental and natural resources statutes also use public trust-like language to express intent that particular natural resources be protected and preserved for future generations. One such statue is the National Environmental Policy Act ("NEPA"), which directs all federal agencies to improve and coordinate federal plans and functions associated with federal projects so as to "fulfill the responsibilities of each generation as trustee of the environment for succeeding generations."[309]

Geothermal energy, while renewable, has the potential to create adverse environmental effects. Often, geothermal development projects are highly land-intensive due to the specificity of their location.[310] Whereas fuel for coal or nuclear plants can be transported to various site destinations, geothermal plants must be located as close as possible to a geothermal source because steam and hot water cannot be transported economically over long distances.[311] Consequently, geothermal resource developers are much less flexible in siting options than other traditional and renewable energy projects.[312] This means that public lands and large tracts of undeveloped private lands are highly sought-after for such projects, creating conflicts with open space values.

Moreover, geothermal energy also requires significant amounts of surface and groundwater for operation, creating yet another conflict between renewable energy development and the public right to water conservation.[313] While most geothermal plants re-inject processed geothermal fluids back into the ground, some simply discharge the fluids onto surface land.[314] Geothermal waste fluid that is released on the surface can harm surface water because, though cooled, it is likely still warmer than surrounding surface water.[315] This disparity in water temperature can affect aquatic and riparian species, which are often intolerant to significant changes in temperature.[316] Furthermore, geothermal waste fluid also contains high mineral concentrations, which can dissolved metals to surface water, changing the mineral and chemical concentration of the stream, and negatively affecting in-stream species.[317] Thus, in addition to infringing upon land and water interests derived from the public trust doctrine, geothermal energy use and development can also implicate wildlife concerns by reducing suitable surface habitats and compromising the integrity of streams and other water resources that support fish and other wildlife.

C. The Geothermal Steam Act

1. Background – The Geothermal Steam Act

As interest in geothermal power development first began to grow in the 1960s, the U.S. Department of the Interior determined that it lacked statutory authority to regulate over geothermal resources on federal land.[318] Recognizing the necessity of creating a legal framework to govern over the development of geothermal resources in federal land, Congress enacted the Geothermal Stream Act ("GSA") in 1970. The GSA authorizes the Secretary of the Interior to "issue leases for the development and utilization of geothermal steam' on federal land and in national forests."[319] Geothermal leases on federal land have a primary term of ten years,[320] at the end of which the Secretary must grant a continuation of the lease for a term up to 40 additional years if "geothermal steam is produced

[307] *See Ill. Cent. R.R. Co. v. Illinois*, 146 U.S. 387, 452 (1892) (holding that state held lands under the Chicago Harbor in Lake Michigan "in trust for the people of the State, that they may enjoy the navigation of the waters, carry on commerce over them, and have the liberty of fishing therein, freed from the obstruction or interference of private parties").

[308] *See generally* Marks v. Whitney, 491 P.2d 374 (Cal. 1973); Scott v. Chi. Park Dist., 360 N.E.2d 773, 780 (111. 1977).

[309] 42 U.S.C.A. § 4331 (2006).

[310] *See* Windrem & Marr, *supra* note 298, at 683.

[311] National Geothermal Collaborative, *Guidelines for Siting Geothermal Power Plants and Electricity Transmission Lines* (July 2004), *available at* http://geo-energy.org/reports/States%20Guide.pdf (last visited Apr. 3, 2018).

[312] *Id*.

[313] *Id*. at 684.

[314] Hadassah M. Reimer & Sandra A. Snodgrass, *Tortoises, Bats, and Birds, Oh My: Protected-Species Implications for Renewable Energy Projects*, 46 IDAHO L. REV. 545, 579 (2010).

[315] *Id*.

[316] *Id*.

[317] *Id*. at 583.

[318] Robert B. Keiter, *The Old Faithful Protection Act: Congress, National Park Ecosystems, and Private Property Rights*, 14 PUB. LAND L. REV. 5, 9 (1993).

[319] 30 U.S.C.A. § 1002 (2006).

[320] *Id*. at § 1005(a).

or utilized in commercial quantities."[321] When geothermal steam has not been produced or utilized in commercial quantities by the end of the initial, ten-year lease term, the Secretary may extend the lease for successive five-year terms if certain conditions are met.[322] Under section 1005(g)'s five-year extension provision, the Bureau of Land Management ("BLM") must conduct a review pursuant to NEPA, considering the cultural, historical, and environmental effects of its leasing decision before making its lease-extension determination.[323]

In 2005, the GSA was amended to provide that BLM lease extensions were mandatory, not discretionary, so long as the lessee met certain conditions unrelated to NEPA.[324] Consequently, NEPA's environmental impact statement ("EIS") requirement, which applies only to discretionary federal decisions[325], is no longer mandated for geothermal lessees. However, there are remedies available for individuals challenging the BLM's leasing decisions. Although the GSA does not expressly provide for a private right of action, private individuals challenging the BLM's decision can utilize the Administrative Procedure Act ("APA").[326]

2. Protected Species and the Geothermal Steam Act

The Endangered Species Act (ESA) was enacted "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved [and] to provide a program for the conservation of such endangered species and threatened species . . . ."[327] Species become eligible for protection under the ESA once they have been listed by the U.S. Fish and Wildlife Service as threatened or endangered.[328] An "endangered species" is one that is in danger of extinction throughout all or a significant portion of its range,[329] while a "threatened species" is one that is likely to become endangered within the foreseeable future.[330]

Geothermal energy has not encountered as many ESA protected-species issues as other forms of renewable energy.[331] However, species listed under the ESA have imposed limits on geothermal development in the past and, as geothermal development increase in the future, conflicts between such development and protected species are bound to increase. Typically, impacts of geothermal energy projects arise from habitat disturbances associated with well drilling and power plant construction.[332] Thus, although the GSA allows lessees of the land to use as much of the surface of the lease as necessary for production, utilization, and conservation of the geothermal resource[333], it prohibits BLM from leasing certain sensitive lands, including "lands acquired or reserved for the protection and conservation of fish and wildlife that are threatened with extinction."[334]

Therefore, the first step for any renewable energy project should be an assessment of potential site locations. Developers seeking to avoid legal challenges, as well as construction and operational delays, should also avoid protected species and their habitat. In many cases, however, it may not be possible to avoid protected species habitat altogether. In that situation, the project developer should consider whether the project could be modified to avoid the highest quality and most valuable habitat.[335]

Conclusion

When Congress passed the Geothermal Steam Act, many thought that exploring renewable energy by way of geothermal development would be the answer to some of our nation's most pressing energy problems.[336] This optimism was not unsound because, unlike other energy projects that have the potential to interfere with public trust values, renewable energy projects are infused with

[321] *Id*. "Produced or utilized in commercial quantities" includes "the completion of a well capable of producing geothermal steam in commercial quantities so long as the Secretary determines that diligent efforts are being made toward the utilization of the geothermal steam." *Id*. at § 1005(d).
[322] *Id*. at § 1005(g).
[323] *Id*.
[324] *Id*. at § 1005(a). The Secretary *shall* extend the primary term of a geothermal lease for 5 years if, for each year after the 10th year of the lease . . . (A) the Secretary determined under subsection (b) that the lessee satisfied the work commitment requirements that applied to the lease for that year; or (B) the lessee paid in annual payments [sic] accordance with subsection (c)." *Id*.
[325] *See Dep't of Transp. v. Pub. Citizen*, 541 U.S. 752, 768, 124 S.Ct. 2204, 159 L.Ed.2d 60 (2004).
[326] 5 U.S.C.A. § 702.
[327] 16 U.S.C.A. § 1531(b) (2006).
[328] *See id*. at §1533.
[329] *Id*. § 1532(6).
[330] *Id*. § 1532(20).
[331] Reimer & Snodgrass, *supra* note 314, at 583.
[332] *Id*. at 579.
[333] 30 U.S.C.A. §§ 1003-06 (2006).
[334] *Id*. § 1014(c)(3).
[335] Reimer & Snodgrass, *supra* note 314, at 585.
[336] *See* 116 CONG. REC. 34,858 (1970) (statement by Rep. Saylor on the soon- to-be-passed Geothermal Steam Act of 1970).

their own public trust values through their promise to preserve land, water, and wildlife resources for future generations. However, as we pursue renewable energies, our sense of urgency to develop such projects must be tempered by an awareness of wildlife protection statutes and regulations. Geothermal energy development and species conservation are not necessarily incompatible, in fact, in the context of the public trust doctrine, they go hand in hand.

e. Nuclear

The nuclear stalemate

Thomas Liss

Nuclear Energy *was* the energy source of the future; a sustainable way to beat climate change. Like other renewable energies, nuclear is a pollutant free alternative to burning fossil fuels. But nuclear is much more efficient than some other renewables—its plants are capable of functioning away from naturally-running water in no-wind, no-sun conditions. But despite its surface appeal, the nuclear energy sector has seen an overall decrease in interest from both government and private actors since the early 2010s.[337]

So, what are some of the legal challenges facing nuclear energy, and how is nuclear affecting wildlife today?

a. The Nuclear Build-Up

The United States has 99 nuclear power reactors in 30 states, operated by 30 different power companies.[338] Statistics from the World Nuclear Association estimate that U.S. suppliers of nuclear energy produced 805 TWh in 2016. Since 2001, these plants have achieved an average capacity factor of over 90 percent, generating up to 807 TWh per year and accounting for about 20 percent of total electricity generated within the United States.[339]

In the early 2000s, the United States entered what has been referred to as the "nuclear renaissance" or a period of increased interest in the production of nuclear power associated with rising fossil fuel prices and growing concern about global climate change. This interest materialized for some investors when Congress passed, and President George W. Bush signed into law, the Energy Policy Act of 2005 (EPAct).[340]

EPAct included a production tax credit of 1.8 cents per kilowatt-hour for the first 6,000 megawatt-hours from new nuclear power plants for the first eight years of their operation, subject to a $125 million annual limit. The production tax credit was meant to place nuclear energy on an equal footing with other sources of pollutant/emission-free power.[341]

For perspective, nuclear average costs in 2012 were 2.4 cents per kWh, compared with gas at 3.4 cents per kWh and coal at 3.3 cents per kWh.[342]

These subsidies have been extended by the current Congress. H.R. 1892, or the Bipartisan Budget Act of 2018, was passed by Congress on February 9, ending a brief government shutdown.[343] Within that bill Congress extended the tax credit of 1.8 cents per kWh for the first 6000MWe of new energy produced at plants that come into production in or after 2021.[344]

b. Challenges to Production

Though politically things may look positive for nuclear, the industry faces challenges other than demanding regulations. The environmental effects of nuclear disasters are long-lasting and pose serious risks. Radiation from meltdowns like the ones at Fukushima and Chernobyl, are extremely dangerous to wildlife both on land and in the water.[345] Although incidents like these are

[337] IAEA-PRIS, US-NRC, MSC 2013.
[338] "US Nuclear Power Policy." World Nuclear Association. 2018
[339] Id.
[340] Energy Policy Act of 2005. HR 6. 109th Cong. (2005).
[341] "US Nuclear Power Policy." World Nuclear Association.
[342] Id.
[343] Bipartisan Budget Act of 2018. HR 1892. 115th Cong. (2018).
[344] Id.
[345] T.G. Deryabina et al., *Long-term Census Data Reveals Abundant Wildlife Population at Chernobyl*, 25 Current Biology 824-826 (2015).

unlikely, the radiation from a meltdown can remain detectable for thousands of years and the damage from the tragedy can remain entrenched in social consciousness for generations.

In addition to overcoming moral questions of risk, producers of nuclear energy are faced with steep initial construction costs and regulations require the building of facilities to undergo several layers of extensive review and permitting. Such an expensive process has bankrupted some of the United States' largest nuclear energy development sites, including those under construction by Westinghouse Electric Company, a recent ex-subsidiary of Toshiba.[346]

c. Storage of Nuclear Waste

Once operational, nuclear facilities must plan for the handling of nuclear waste in accordance with NRC guidelines.[347] During the first 40 years that nuclear waste was being created in the United States, no legislation was enacted to manage its disposal. Still, despite attempts to operationalize Yucca Mountain as a permanent waste disposal site, no permanent policy to nuclear waste has been established. Nuclear waste which continues to be produced at facilities across the United States, some of which remains radioactive with a half-life of more than one million years, is being kept in various types of temporary storage--mostly comprising of steel and concrete casks.[348]

d. Florida Case Study – Other Legal Challenges Facing Nuclear Power

Once clear of the barriers to entry, producers of nuclear energy face lawsuits by environmental advocacy groups while operational. One such lawsuit is ongoing near Miami, FL, where Florida Power & Light (FPL) runs the controversial Turkey Point nuclear facility.

The citizen lawsuit, filed in July 2016 by the Southern Alliance for Clean Energy (SACE) and Tropical Audubon Society (TAS), alleges that Turkey Point Power Plant, operated by FPL, discharged and continues to discharge at least 600,000 pounds of salt and other contaminants directly into the Biscayne Aquifer in violation of Section 505(a)(1) of the federal Clean Water Act (CWA), 33 U.S.C. §1365, and in violation of the terms of the National Pollutant Discharge Elimination System (NPDES) permit (Permit No. FL0001562).[349]

The citizens' groups are concerned that the contaminated water leaking from FPL antiquated cooling canals used to cool the nuclear reactors is polluting the Biscayne Aquifer, the sole source of drinking water for over 3 million Americans and supply to Biscayne National Park. SACE has claimed that FPL violated and continues to violate its NPDES permit by unauthorized discharges of pollutants, including, but not limited to, excess salinity, phosphorus, ammonia, TKN (Total Kjeldahl Nitrogen), total nitrogen, and radioactive tritium, into waters Biscayne Bay. Additionally, discharges of hypersaline water contaminated with radioactive tritium into groundwater threaten the water supply for Miami-Dade County and the Florida Keys. SACE also claims FPL has violated the CWA by causing violations of water quality standards in Biscayne Bay, which is protected from degradation in its designation as Outstanding National Resource and Outstanding Florida Waters.[350]

FPL argues that when the Florida Department of Environmental Protection in 2016 granted a Consent Order, and when Florida Department of Environmental Resource Management in 2015 drafted a Consent Agreement, it was a bar to this lawsuit. FPL filed a Motion to Dismiss.

After a *de novo* review, U.S. District Court Judge Darrin P. Gayles denied FPL's Motion to Dismiss, finding that Plaintiffs' claims were redressable and not moot by virtue of state administrative action. Based on Judge Gayles' ruling, the lawsuit is set to move forward to trial after settling issues of standing. The trial is set for May 29, 2018.

Following a finding of redressability, the trial in May could result in FPL paying high expenses to clean pollutants out of Biscayne Aquifer. The potential risk for similar discharges probably weighs heavily on producers interested in entering the market.

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[346] "Westinghouse Files for Bankruptcy, in Blow to Nuclear" Diane Cardwell, Johnathan Soble. New York Times. March 29, 2017.

[347] "Operating Reactors: What We Regulate" U.S. Nuclear Regulatory Commission. Updated January 2018. Accessed April 2018. https://www.nrc.gov/reactors/operating.html

[348] "Spent Fuel Storage: Dry Cask Storage" U.S. Nuclear Regulatory Commission. Updated August 2017. Accessed April 2018. https://www.nrc.gov/waste/spent-fuel-storage/dry-cask-storage.html

[349] Southern Alliance for Clean Energy and Tropical Audubon Society Incorporated v. Florida Power & Light Company. Case 1:16-cv-23017-XXXX. (S.D. Fla. 2018).

[350] Id.

It's not all bad news for nuclear. After all, nuclear continues to supply about 20 percent of America's power, and continued nuclear subsidies have been approved by Congress that extend far into the future.[351] Additionally, many companies are continuing to create innovative designs that make nuclear power production safer and more cost-effective, like new Small Modular Reactor (SMR) designs that can vary output based on demand.

f. Biofuel

Biofuel: Grow and Go

Nick Castro

The United States relies primarily on non-renewable sources of energy, such as petroleum, natural gas, and coal.[352] There's no denying it – we will run out of oil and other fossil fuels at some point. Globally, we currently consume the equivalent of over 11 billion tons of oil every year.[353] Crude oil reserves are vanishing at the rate of 4 billion tons a year.[354] If we continue at this rate without any increase for our growing population or aspirations, our known oil deposits will last until 2052.[355] We will still have gas and coal left by this point.[356] But if we increase gas production to fill the energy gap left by oil, those reserves will only give us an additional eight years, taking us to 2060.[357] After we deplete the earth's oil and gas, it is often claimed that we have enough coal to last hundreds of years. And yet if we step up production to fill the gap left because we depleted our oil and gas reserves, known coal deposits will run out in 2088.[358] But instead of panicking, asking how much oil is left, and worrying about how long fossil fuels will last, we should embrace the alternatives that are out there. One alternative source of energy is biofuel.

A biofuel is any type of fuel in which the energy is derived from the process of biological carbon fixation.[359] Biological carbon fixation occurs in living organisms. The biggest difference between a biofuel and a fossil fuel is the time period over which the fixation occurs. In a biofuel, fixation occurs in months or years. In a fossil fuel, fixation occurs over thousands or millions of years.[360] Additionally, fossil fuels are made entirely of hydrogen and carbon atoms while biofuels contain carbon, hydrogen, and oxygen. Biofuels, like fossil fuels, contribute to air pollution when they are burned, but do so at a lower rate and cause less smog and acid rain.[361] Despite their advantage over fossil fuels in renewability, biofuels may not be better for the environment because of the amount of resources needed to grow the crops required for their production.

Biofuels have been around as long as cars. At the start of the 20th century, Henry Ford planned to fuel his Model T's with ethanol, and early diesel engines were shown to run on peanut oil.[362] But discoveries of vast petroleum deposits kept gasoline and diesel cheap for decades, and biofuel development was put on hold. However, with the recent rise in oil prices, along with growing concern about climate change caused by carbon dioxide emissions, biofuels have been regaining popularity. Most of the gasoline in the United States is blended with a biofuel – ethanol. Blends of petroleum-based gasoline with 10% ethanol, commonly referred to as E10, account for more than 95% of the fuel consumed in motor vehicles with gasoline engines.[363] Ethanol is the same substance found in alcoholic beverages, except that it is made from corn that has been heavily processed. There are many ways to make biofuels, but they generally use chemical reactions, fermentation, and heat to break down the starches, sugars, and other molecules in plants.[364]

Biofuels can be divided into three generations, the main differences being their sources and how they are "manufactured." First generation biofuels, also known as conventional biofuels, are obtained from starchy or oilseed

[351] Bipartisan Budget Act of 2018. HR 1892. 115th Cong. (2018).
[352] *Estimate U.S. Energy Consumption in 2016: 97.3* Quads, Lawrence Livermore National Laboratory, https://flowcharts.llnl.gov/content/assets/images/energy/us/Energy_US_2016.png (last visited Apr 6, 2018).
[353] *The end of fossil fuels*, ecotricity.co.uk, https://www.ecotricity.co.uk/our-green-energy/energy-independence/the-end-of-fossil-fuels (last visited Apr 6, 2018).
[354] *Id*.
[355] *Id*.
[356] *Id*.
[357] *Id*.
[358] *Id*.
[359] *Biofuel Fasts,* biofuel.org.uk, http://biofuel.org.uk/biofuel-facts.html (last visited Apr 6, 2018).
[360] *Id*.
[361] *Biofuel Facts*, softschools.com, http://www.softschools.com/facts/energy/biofuel_facts/2745/ (last visited Apr 6, 2018).
[362] *Biofuels,* National Geographic, https://www.nationalgeographic.com/environment/global-warming/biofuel/ (last visited Apr 6, 2018).
[363] *Almost all U.S. gasoline is blended with 10% ethanol*, Today in Energy, eia.gov (May 4, 2016) https://www.eia.gov/todayinenergy/detail.php?id=26092.
[364] *Biofuels*, *supra* note 362.

crops such as sugarcane, barley, and sunflowers.[365] The first generation mainly consists of ethanol made from plant crops. The second generation of biofuels, a.k.a. advanced biofuels, are derived from plant and animal waste streams.[366] "What separates them from first generation biofuels [is] the fact that feedstock used in producing second generation biofuels are generally not food crops. The only time the food crops can act as second generation biofuels is if they have already fulfilled their food purpose."[367] Lastly, the third and most recent generation of biofuel are biofuels derived from algae. "Previously, algae were lumped in with second generation biofuels. However, when it became apparent that algae are capable of much higher yields with lower resource inputs than other feedstock, many suggested that they be moved to their own category."[368] As scientists continue to develop the third generation of biofuels, difficult questions have arisen over whether biofuels in general can realistically be relied upon by humankind.

The Promise of Algae

Algae grows naturally all over the world, and was first explored as a fuel alternative in 1978 under President Jimmy Carter.[369] "According to some sources, an acre of algae could yield 5,000 to 10,000 gallons of oil a year, making algae far more productive than soy (50 gallons per acre), rapeseed (110 to 145 gallons), jatropha (175 gallons), palm (650 gallons), or cellulosic ethanol from poplars (2,700 gallons)."[370] People who work closely with algae have suggested that yields as high as 20,000 gallons per acre are attainable.[371] "The International Energy Agency expects that biofuels will contribute 6 percent of total fuel use by 2030, but could expand significantly if undeveloped petroleum fields are not accessed or if substantial new fields are not identified."[372] Additionally, according to the U.S. Department of Energy, yields that are ten times higher than second generation biofuels mean that only 0.42 percent of U.S. land area would be needed to generate enough biofuel to meet all of the United States' needs. Given that the United States is the largest consumer of fuel in the world, this gives credence to the efficiency of algal-based biofuels.[373]

In addition to the many uses of algae-based biofuel, another favorable property of algae is the number of ways it can be cultivated. Algae can be grown in open ponds, closed-loop systems, or photobioreactors.[374] Open ponds are the simplest systems in which algae is grown. They are simple and have low capital costs, but are less efficient than other systems. Open ponds are also concerning because other organisms can contaminate the pond and potentially damage or kill the algae. Closed-loop systems are similar to open ponds, but they are not exposed to the atmosphere and use a sterile source of carbon dioxide.[375] These systems have potential because they may be able to be directly connected to carbon dioxide sources (such as smokestacks) and thus use the gas before it is every released into the atmosphere, further offsetting algae biofuel's emissions. Lastly, photobioreactors are the most advanced and thus most difficult systems to implement, resulting in high capital costs. Their advantages in terms of yield and control, however, are unparalleled. Photobioreactors are closed systems, but are expensive and not yet practicable. It should be noted that in all three systems algae are able to be grown almost anywhere that temperatures are warm enough. This means that no farm land need be threatened by algae, alleviating a big concern for farmers and wildlands. Additionally, algae can be grown in waste water, which means they can offer secondary benefits by helping digest municipal waste while avoiding taking up any additional land. All of the factors above combine to make algae easier to cultivate than traditional biofuels.

Despite the allure and promise of algae and other biofuels, some energy experts are quick to highlight the challenges

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[365] Wilson Yeo, *3 Generations of Biofuels*, Green Energy Helps (Apr 26, 2014, updated Nov 1, 2014) https://www.greenenergyhelps.com/generations-of-biofuels/.

[366] *Second Generation Biofuels,* biofuel.org.uk, http://biofuel.org.uk/second-generation-biofuels.html (last visited Apr 6, 2018).

[367] *Id.*

[368] *Third Generation Biofuels,* biofuel.org.uk, http://biofuel.org.uk/third-generation-biofuels.html (last visited Apr 6, 2018).

[369] Stefani Newman, *How Algae Biodiesel Works*, https://science.howstuffworks.com/environmental/green-science/algae-biodiesel.htm (last visited Apr. 25, 2018).

[370] Eric Wesoff, *Hard Lessons From the Great Algae Biofuel Bubble,* Green Tech Media (Apr 19, 2017) https://www.greentechmedia.com/articles/read/lessons-from-the-great-algae-biofuel-bubble#gs.rHglZpY.

[371] *Third Generation Biofuels*, *supra* note 368.

[372] Michael Hannon, Javier Gipel, et. al., *Biofuels from algae: challenges and potential,* US National Library of Medicine, National Institute of Health (Sept 2010) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3152439/.

[373] *Third Generation Biofuels*, *supra* note 368.

[374] *Id*.

[375] *Id*.

of algae, and more generally biofuel, fuel commercialization.

Biofuel's Barriers

Although biofuel has incredible potential to be a main source of fuel in the United States, there are still challenges and adverse consequences that prevent biofuel from being widely utilized. For example, the relationship between U.S. renewable fuel standards and biofuel producers has affected wildlife. "According to a new analysis of satellite data, the renewable fuel standard [376] prompted the conversion of 4.2 million acres of non-cropland—primarily grassland—to agricultural use. Instead of driving down pollution, the standard is detracting from land that used to sequester carbon, protect water supplies and provide important wildlife habitat." [377] "Corn-based ethanol, the world's dominant biofuel, raises land, food, and water issues associated with growing more crops for fuel feedstock."[378] In addition to impacts on land and wildlife, the cost of implementing large-scale liquid fuel efforts is much higher than venture capitalist can afford. "A $25 million Aquatic Species Program, a $100 million DOE program, or $300 million in venture capital will not get it done. It will take tens of billions of dollars and decades of research and work." [379] The methods of cultivation and strain of algae are important, but they are not the only components of developing a scaled-up algae grow operation. Co-products, nutrients, harvesting, drying and conversion technologies are other equally important considerations that make investing biofuels a risky endeavor. Additionally, issues with food security, sustaining biodiversity, and global warming remain.[380]

Conclusion

At first glance, biofuels may seem like a commonsense answer to dependence on fossil fuels. Biofuel is renewable, cleaner than fossil fuels, and can be made from plants that can be grown in several different environments. However, upon closer scrutiny, the efficacy of large-scale biofuel implementation begins to unravel. A better understanding of global warming, increased awareness of the fragility of the food supply, and a general trend toward "greener" alternatives have all led to a decline in the popularity of biofuels. Further, there is not enough land currently in use to meet biofuel needs. However, availability may be the driving force in adoption of alternatives energies, making biofuels the next logical choice while other alternatives are still being developed. Biofuels have already debuted in full fuel engines in countries like Brazil, and as additives to standard fossil fuels in almost every nation. The transition is likely to be subtle but slow as more and more fossil fuel is replaced with biofuel.[381] One day vehicles around the world may run entirely on biofuel. But, until then, the biofuel industry, like the plants the industry relies on, must grow before we can harness the full potential of plants.

ABOUT THE WILDLIFE LAW CALL

These case briefs and articles were composed by students of Carol Frampton's Spring 2018 Legal Issues in Energy Development and Wildlife course at Michigan State University College of Law. The students selected recent fish- and wildlife-related decisions and emerging issues to summarize for this newsletter. **The *Wildlife Law Call* does not report every recent case or issue,** but we hope you will find these briefs and articles interesting and informative.

Carol is general counsel for the Association of Fish & Wildlife Agencies (AFWA). AFWA is a professional organization whose members are the fish and wildlife agencies of the 50 U.S. states as well as territories, several Canadian provinces and Mexican states, as well as some U.S. federal agencies.

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[376] *Renewable Fuel Standard Program,* U.S. EPA, https://www.epa.gov/renewable-fuel-standard-program (last visited Apr 6, 2018). (The Renewable Fuel Standard (RFS) is a federal program that requires transportation fuel sold in the U.S. to contain a minimum volume of renewable fuels).

[377] Peter Lehner, *Study Shows Wildlife Habitat Is Disappearing in Favor of Crops for Biofuel*, Earthjustice (Mar 31, 2017) https://earthjustice.org/blog/2017-march/study-shows-wildlife-habitat-is-disappearing-in-favor-of-crops-for-biofuel.

[378] Christina Nunez, *Are Biofuels Worth the Investment,* National Geographic (https://www.nationalgeographic.com/environment/energy/great-energy-challenge/big-energy-question/are-biofuels-worth-the-investment/ (last visited Apr 6, 2018).

[379] Wesoff, *supra* note 370.

[380] *Disadvantages of Biofuels,* biofuel.org.uk, http://biofuel.org.uk/disadvantages-of-biofuels.html (last visited Arp 6, 2018).

[381] *Advantages of Biofuels,* biofuel.org.uk, http://biofuel.org.uk/advantages-of-biofuels.htmls (last visited Apr 6, 2018).

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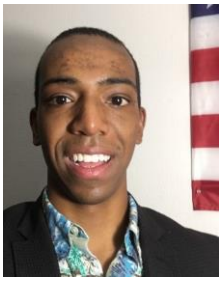

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