

# HEAT WAVES AND A PUBLIC-PRIVATE PARTNERSHIP IN ALASKA

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## ABSTRACT

*The recently-passed Inflation Reduction Act represents the largest single step that Congress has taken to combat harms from climate change. In its over \$360 billion commitment, the Act incentivizes clean energy development and generation, includes methods to directly lower residential utility bills and increase home efficiency, promotes cleaner transportation and agricultural practices, and funds states' and cities' efforts to meet their individual climate goals. While many environmental organizations applauded the Act's passage, some – even simultaneously – expressed concern about its tradeoffs: the Act continues to invest in fossil fuels, subsidizing pipeline construction and guaranteeing new oil and gas leases, specifically expanding leasing in Alaska's Cook Inlet.*

*Given the scope and magnitude of climate change, the need for legal and policy action will only accelerate. Some efforts may be large-scale and sweeping in nature, like the Inflation Reduction Act, while others may be more confined and issue-specific. Where the focus is on a narrower aspect of the problem, or on a particular localized need, opportunity exists for collaboration between public and private entities to provide solutions. So-called “public private partnerships” have long existed in this space, yet there are few case studies*

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*analyzing the effectiveness of such partnerships.*

*This Article contributes to the conversation by providing one case study that demonstrates a method for assessing public-private partnerships in the context of climate change. Building on themes and principles from contract law and environmental justice literature, the Article identifies key characteristics of successful public-private partnerships and explains how participants in these partnerships could further environmental justice while also meeting partnership goals. The Article then applies its suggested framework to an existing public-private partnership in Alaska and describes how participants in these partnerships might want to structure, implement, and assess their success.*

## I. INTRODUCTION

In the past thirty years, public-private partnerships (PPPs) have emerged as an important feature of the global development and innovation policy landscape.<sup>1</sup> These joint governance arrangements and collaborative partnerships have cut across firm, industry, and national boundaries in unprecedented ways. PPPs have played a central role in projects focusing on large-scale public service delivery and public

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1. See Margaret Chon et al., *Charting the Triple Interface of Public-Private Partnerships, Global Knowledge Governance, and Sustainable Development Goals*, in *THE CAMBRIDGE HANDBOOK ON PUBLIC-PRIVATE PARTNERSHIPS, INTELLECTUAL PROPERTY GOVERNANCE, AND SUSTAINABLE DEVELOPMENT 3* (Margaret Chon et al. eds., 2018) (“In less than two decades, public-private partnerships (PPPs) have become an essential feature of the global development landscape and a fixation in development discourse and practice.”); see also Susan Ross, *Why Nonprofits Deserve More Credit for Public-Private Partnerships*, DEVEX (Aug. 23, 2013), <https://www.devex.com/news/why-nonprofits-deserve-more-credit-for-public-private-partnerships-81684> (“Public-private partnerships have become all the rage.”).

infrastructure,<sup>2</sup> to sustainability, green energy and agriculture,<sup>3</sup> and to public health and education.<sup>4</sup>

In the last decade, environmental and patent law scholars have

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2. See, e.g., James Barlow et al., *Europe Sees Mixed Results from Public-Private Partnerships for Building and Managing Health Care Facilities and Services*, 32 HEALTH AFF. 146, 146 (2013) (“European governments are increasingly partnering with the private sector to underwrite the costs of constructing and operating public hospitals and other health care facilities and delivering services.”); see also J. (Joop) F.M. Koppenjan, *The Formation of Public-Private Partnerships: Lessons from Nine Transport Infrastructure Projects in the Netherlands*, 83 PUB. ADMIN. 135, 135 (2005) (examining nine case studies involving transport infrastructure PPPs); *5 Examples of Public-Private Partnerships in Implementation*, NMBL STRATEGIES (Mar. 31, 2022), <https://www.nmblstrategies.com/blog/5-examples-of-public-private-partnerships-in-implementation> (“The year 2006 saw Cintra Concesiones de Infraestructuras de Transporte and Macquarie Infrastructure Partners begin a deal to operate 157 miles of Indiana-based highway. The company paid a one-time fee of 3.8 billion USD for a 75-year lease to run the tollway and in return receive the toll revenue. An estimate shows this saves the state of Indiana 100 million USD for operating during the same timeframe, but the project has not reaped the anticipated financial returns for the company.”); see also *id.* (“In 2010, the Jefferson National Expansion Memorial, better known as the Gateway Arch, set out to revive its declining tourism numbers through a unique Public-Private Partnership wherein the Gateway Arch Park Foundation (at the time the CityArchRiver Foundation) raised \$250 million in private funding and Great Rivers Greenway oversaw a publicly approved sales tax of St. Louis City and St. Louis County that raised an additional \$86 million for the project. This is the largest Public-Private Partnership in National Park Service history, and it opened in 2018. The project has resulted in a 30% increase in attendance for the monument.”).

3. See, e.g., *Tef Crop Improvement*, SYNGENTA FOUNDATION, <https://www.syngentafoundation.org/tef-crop-improvement> (last visited Apr. 4, 2022) (aiming to develop drought resistant cultivators of tef—“the most important cereal crop in the Horn of Africa”—the Syngenta Foundation, the University of Bern, and the Ethiopian Institute for Agricultural Research commenced the Tef Improvement Project together in 2006); see also *The Marketplace for Sustainable Technology*, WIPO GREEN, <https://www3.wipo.int/wipogreen/en/> (last visited Apr. 14, 2022) (connecting providers and seekers of environmentally friendly technologies).

4. See, e.g., IAVI, <https://www.iavi.org/about> (last visited Apr. 4, 2022) (partnering with governments and private actors, IAVI is a nonprofit scientific research organization working to develop vaccines and antibodies for HIV, tuberculosis, and other emerging infectious diseases like Covid-19); see also Melissa Levine, *Intellectual Property and Public-Private Partner Motivations: Lessons from a Digital Library*, in THE CAMBRIDGE HANDBOOK ON PUBLIC-PRIVATE PARTNERSHIPS, INTELLECTUAL PROPERTY GOVERNANCE, AND SUSTAINABLE DEVELOPMENT 199 (Margaret Chon et al. eds., 2018) (exploring a PPP that started in 2004 between the University of Michigan and Google that formed the basis of the HathiTrust Digital Library); MILLENNIUM CHALLENGE CORPORATION, <https://www.mcc.gov/about> (last visited Apr. 14, 2022) (created by U.S. Congress in 2004 to provide time-limited grants, the Millennium Challenge Corporation (MCC) “forms partnerships with developing countries [that] are committed to good governance, economic freedom and investing in their citizens” with the aim of “helping [to] lead the fight against global poverty.”).

argued that PPPs may have a significant effect on their areas of expertise because PPPs have the potential to promote innovation,<sup>5</sup> facilitate access to green technologies,<sup>6</sup> and “comprehensively address non-IPR [intellectual property rights] barriers to technology transfer.”<sup>7</sup> PPPs may also achieve public health goals through the “pooling of resources and expertise, increasing knowledge sharing, and reducing duplication of efforts and mistakes.”<sup>8</sup> Further confirming the continued centrality of PPPs in problem-solving initiatives and practice in these spaces, the Sustainable Development Goals (SDGs), adopted by United Nations General Assembly resolution in 2015, highlight collaborative partnerships as essential mechanisms for achieving the United Nations 2030 Sustainable Development Agenda (2030 Agenda).<sup>9</sup> In particular, Goal Seventeen— “[s]trengthen[ing] the means of implementation and revitaliz[ing] the Global Partnership for Sustainable Development”<sup>10</sup>— seeks to “bring[] together national governments, the international community, civil society, the private sector and other actors.”<sup>11</sup>

Yet, despite the rising-star status of PPPs, a significant number of unresolved questions and issues remain as to their form, function, and impact. Many of these unresolved questions and issues are frustratingly basic, yet complicated for a variety of reasons, including the lack of a general consensus on the definition of “public-private partnerships” and of the key characteristics of such partnerships.<sup>12</sup> For example, are PPPs

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5. See, e.g., Constance E. Bagley & Christina D. Tvarnø, *Pharmaceutical Public-Private Partnerships: Moving from the Bench to the Bedside*, 4 HARV. BUS. L. REV. 373, 373 (2014) (“[P]roperly crafted [PPP] arrangements can promote innovation more efficiently than traditional self-optimizing contracts.”).

6. See, e.g., *Financing Green Infrastructure - Is a Community-Based Public-Private Partnerships [sic] (CBP3) Right for You?*, U.S. EPA, <https://www.epa.gov/G3/financing-green-infrastructure-community-based-public-private-partnerships-cbp3-right-you#Why-CBP3> (last visited Apr. 14, 2022) (“Partnering with the private sector has been identified as a viable alternative solution that will improve and sustain the ability of local governments to protect and restore our nation’s waters . . .”).

7. Van Smith, *Enabling Environments or Enabling Discord: Intellectual Property Rights, Public-Private Partnerships, and the Quest for Green Technology Transfer*, 42 GEO. J. INT’L L. 817, 817 (2011).

8. Liza S. Vertinsky, *Patents, Partnerships, and the Pre-Competitive Collaboration Myth in Pharmaceutical Innovation*, 48 U.C. DAVIS L. REV. 1509, 1515 (2015).

9. See generally G.A. Res. 70/1, *Transforming Our World: The 2030 Agenda for Sustainable Development* (Sept. 25, 2015) [hereinafter *2030 Agenda*].

10. *Id.* at 14.

11. U.N. Dept. of Econ. & Soc. Affs., *The Sustainable Development Goals Report 2018*, at 13 (2018).

12. See Jomo KS et al., *Public-Private Partnerships and the 2030 Agenda for Sustainable Development: Fit for Purpose?* 3 (U.N. Dept. of Econ. & Soc. Affs., Working Paper No. 148, 2016), [https://www.un.org/esa/desa/papers/2016/wp148\\_2016.pdf](https://www.un.org/esa/desa/papers/2016/wp148_2016.pdf) (explaining that

“medium-to long-term relationship[s] between the public and private sectors[] involving the sharing of risks and rewards of multisector skills, expertise and finance to deliver desired policy outcomes,”<sup>13</sup> something that can also be said of many supply chain contracts? Or, are they “[a] form of cooperation between government and business (in many cases also involving NGOs, trade unions, and/or knowledge institutions) in which they agree to work together to reach a common goal or carry out a specific task, jointly assuming the risks and responsibility and sharing their resources and competencies[?]”<sup>14</sup> Is the last part of that definition – jointly assuming the risks and responsibilities – a necessary characteristic or an ideal characteristic of PPPs? Should we really call a partnership between public and private by the same name – public-private partnership – no matter the context?

Certainly, it seems fundamental that all PPPs “require some type of effective internal governance or management to coordinate the differing approaches of partners internally, and they also require mechanisms to interface with any external stakeholders within their immediate networks.”<sup>15</sup> Yet, beyond these core tenants of PPPs – ones that are much harder to master in practice than in theory – most simply, there are not enough focused case studies on particular PPPs to better assess and understand their benefits and their challenges.

This Article seeks to provide one such case study. Alaska provides a unique space to study some of these questions, particularly as they relate to the fields of sustainability, environmental justice, and green technologies.<sup>16</sup>

To begin, the size alone of Alaska – “[i]t is one-fifth the size of the lower 48 states . . . two and a half times larger than Texas, and larger than the next three largest states in the U.S. combined”<sup>17</sup> – makes every day conveniences in the lower 48, like driving to a grocery or hardware store, more difficult. The economic impact of the natural gas and oil industry

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“as the OECD (2012) highlighted: ‘there is no widely recognized definition of PPPs and related accounting framework’”); see also *id.* (“Eurostat, IASB, IMF, IFRS and others work with different definitions.”).

13. *Id.* at 27 (citing Standard and Poor’s (2005), *Public-Private Partnerships: Global Credit Survey* (2005)).

14. *Id.* (citing the Ministry of Foreign Affairs of the Netherlands (2013)).

15. Chon et al., *supra* note 1, at 10.

16. See *Protecting Essential Infrastructure in Alaska: The Story*, THE INTERSECTOR PROJECT, [https://intersector.com/case/apip\\_alaska/](https://intersector.com/case/apip_alaska/) (last visited Sept. 9, 2022) (“Alaska’s vast size, sparse population, and difficult terrain makes communication and transportation across the state a challenge. Its regional isolation also leaves many Alaskans dependent on limited supply chains for crucial commodities.”).

17. Official Alaska State Website, State of Alaska, <https://alaska.gov/kids/learn/population.htm>.

on Alaska is also unlike that in any other state. A recent study conducted by PricewaterhouseCoopers, and commissioned by the American Petroleum Institute, shows that the industry supported 10.3 percent of Alaska's total employment, provided 13.9 percent of the state's total in labor income, and contributed to 35.7 percent of the state's total gross domestic product.<sup>18</sup>

When one sector like this directly and indirectly touches so many lives in Alaska, another challenge arises in the context of sustainability, environmental justice, and green technologies. The oil and gas industry is supporting life in Alaska—but its practices do not likewise support sustained life in Alaska. Relevant to this Article's discussion of heatwaves given the intersection with climate change, another recent study shows that since the 1950s, the American Petroleum Institute and the oil industry more generally has known that climate science and the products of Exxon and others would likely contribute to global warming.<sup>19</sup>

ExxonMobile (Exxon and Mobile merged in 1999) currently boasts that it "is one of the top three producers of oil and the largest holder of discovered gas resources on Alaska's North Slope" and that "over 70 percent of the workforce consists of ExxonMobile employees based [] in Alaska, or by local Alaskan contractors."<sup>20</sup> The first well drilled was at Yakatoga Beach in 1925, with much of the state since explored.<sup>21</sup>

In a case study focusing on Exxon's practices, despite the internal knowledge for decades that it was likely contributing to global climate change, the authors of the case study found "that there were systematic discrepancies between on the one hand, what Exxon and ExxonMobile scientists said about climate-science privately and in academic circles, versus what Exxon, Mobile, and ExxonMobile said to the general public. . . . [Their] analyses showed that ExxonMobile misled the public about basic climate science and its implications. They did so by contributing quietly to climate science, and loudly promoting doubt about that science."<sup>22</sup>

This presents an especially difficult moment for the people in Alaska.

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18. *New Analysis: Alaska-Made Natural Gas and Oil Drives U.S. Economic Recovery, Strengthens all Industries*, AMERICA PETROLEUM INSTITUTE, (July 20, 2021), <https://www.api.org/news-policy-and-issues/news/2021/07/20/alaska-pwc>.

19. *Tracing Big Oil's PR War to Delay Action on Climate Change*, THE HARVARD GAZETTE, (Sept. 29, 2021), <https://news.harvard.edu/gazette/story/2021/09/oil-companies-discourage-climate-action-study-says/>.

20. *ExxonMobil in Alaska*, EXXONMOBIL, <https://corporate.exxonmobil.com/locations/united-states/alaska> (last visited Nov. 30, 2022).

21. *Id.*

22. *Id.*

How can they solve the immediate impact that global warming has on their state when the industry the Alaskan people rely on so much publicly promotes doubt about climate science? The stakes are high, and the challenge is multifaceted. On one hand, transitioning away from the oil and gas industry raises fears about job losses and a depleted Permanent Fund for future Alaskans.<sup>23</sup> On the other, unabated climate change poses many direct, unique threats to Alaskans (present and future); some Alaska Native Villages and coastal communities have already begun the process of relocating.<sup>24</sup> One possible approach to narrow the scope of the challenge is to engage a variety of sectors outside of oil and gas to raise funds and awareness, and to make adopting climate-friendly practices financially appealing for consumers.

This approach is perhaps best seen in the way that Alaska appears to have leaned into employing the collaborative strategy that PPPs—at least in theory—provide to meet needs unique to its residents. For example, the state partnered with several southeast Alaskan communities and Norwegian Cruise Line to “save” the 2021 cruise season.<sup>25</sup> There was also a multi-year collaborative partnership between the Department of Defense, Alaska Division of Homeland Security and Emergency Management, infrastructure and service industries, including the Alaska Railroad, State Farm, Safeway, ConocoPhillips, AT&T, and non-profits, including the Alaska Travel Industry Association and the Blood Bank of Alaska, designed to “provide[] a forum for the public, private, and non-profit sectors to share information and develop strategies for continuity of services during periods of vulnerability or threat.”<sup>26</sup> Warming permafrost poses a threat to essential infrastructure, like pipelines and roads.<sup>27</sup> In a large state like Alaska, with many rural, isolated

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23. AK Const., Art. 9, § 15; *see also* Alaska Stat. § 37.13.020(1) (finding that the Permanent Fund “should provide a means of conserving a portion of the state’s revenue from mineral resources to benefit all generations of Alaskans”).

24. U.S. GOV. ACCOUNTABILITY OFF., REPORT TO CONGRESSIONAL REQUESTERS ABOUT ALASKA NATIVE VILLAGES, GAO-09-551, (June 2009).

25. Press Release, Off. of Governor Mike Dunleavy, Alaska Pub./Priv. P’ship Saves 2021 Cruise Season (May 27, 2021), <https://gov.alaska.gov/newsroom/2021/05/27/alaska-public-private-partnership-saves-2021-cruise-season/>.

26. *Protecting Essential Infrastructure in Alaska: The Collaboration*, THE INTERSECTOR PROJECT, [https://intersector.com/case/apip\\_alaska/](https://intersector.com/case/apip_alaska/) (last visited Sept. 9, 2022). This partnership came about in response to concerns over “potentially hazardous disruptions to Alaska’s critical infrastructure, whether man-made or natural,” and reflected an understanding that Alaska’s “vast size, sparse population, and difficult terrain” could pose a challenge to communicating and transporting goods and services during emergencies or periods of vulnerability. *Id.*

27. Joshua Partlow, *Warming Permafrost Puts Key Arctic Pipelines, Roads at ‘High Risk,’ Study Says*, WASH. POST (Jan. 11, 2022),

communities, failing infrastructure can have catastrophic results, especially during emergencies. Small, rural communities may be without essential services for longer periods of time, and, during disasters or emergencies, are advised to prepare to “stand alone.”<sup>28</sup>

This Article will test some of the basic assumptions of PPPs—namely, that they are indeed an effective, collaborative strategy to address particularly identified, unmet needs. It will do so by first looking at the unique landscape of Alaska to closely evaluate the real-time issue of hazardous heat in the Pacific Northwest. This Article will set forth lessons learned from previous PPPs that current and future PPPs should remember when setting up their own collaborative relationships, and will describe the aspects of environmental justice that PPPs may seek to promote. Finally, this Article will briefly explore how a current PPP in Juneau might apply these lessons to its partnership.

## II. HAZARDOUS HEAT IN THE PACIFIC NORTHWEST

Alaska has experienced record-breaking heat in recent years, just as climate scientists have predicted for over fifty years.<sup>29</sup> Certainly, this is not unique to Alaska or the United States. This past July, for the first time since the United Kingdom started keeping temperature measures, extreme heat shattered records as temperatures rose above 104 degrees Fahrenheit.<sup>30</sup> This heatwave is estimated to have caused the deaths of 1,000 people in England and Wales.<sup>31</sup> A heatwave in Greenland with

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<https://www.washingtonpost.com/climate-environment/2022/01/11/permafrost-melting-arctic/>.

28. STATE OF ALASKA, DEPT. OF HOMELAND SECURITY & EMERGENCY MANAGEMENT AND DEPT. OF MILITARY AND VETERANS AFFAIRS, ALASKA EMERGENCY RESPONSE GUIDE FOR SMALL COMMUNITIES 3 (Sept. 2011), [https://www.commerce.alaska.gov/web/Portals/4/pub/ACCIMP/Alaska\\_Emergency\\_Response\\_Guide.pdf](https://www.commerce.alaska.gov/web/Portals/4/pub/ACCIMP/Alaska_Emergency_Response_Guide.pdf); see also Partlow, *supra* n.140 (discussing projections that, in coming years, human-made infrastructure will be increasingly at risk with warming permafrost).

29. Warren Cornwall, *Even 50-Year-Old Climate Models Correctly Predicted Global Warming*, SCIENCE (Dec. 4, 2019), <https://www.science.org/content/article/even-50-year-old-climate-models-correctly-predicted-global-warming#:~:text=Climate%20scientists%20first%20began%20to,levels%20could%20boost%20global%20temperatures>.

30. Chelsea Harvey, *U.K. Shatters Heat Record Three Times in a Matter of Hours*, SCI. AM.: ENV'T (July 20, 2022), <https://www.scientificamerican.com/article/u-k-shatters-heat-record-three-times-in-a-matter-of-hours/#:~:text=Yesterday%2C%20as%20a%20staggering%20heat,record%20for%20a%20second%20time>.

31. Adam Vaughan, *40° C Heatwave May Have Killed 1000 People in England and Wales*, NEW SCIENTIST (July 28, 2022), <https://www.newscientist.com/article/2331349-40c-heatwave-may-have->



“prolonged high temperatures ha[s] triggered rapid melting of the ice sheet, releasing about 6 billion tonnes of water per day into the ocean.”<sup>32</sup> During a 2021 heatwave in the Pacific Northwest, cities reported new record high temperatures,<sup>33</sup> transportation was stymied,<sup>34</sup> and people flocked to emergency rooms seeking care for heat-related health effects.<sup>35</sup>

Yet Alaska, being near the pole, has experienced some of the most drastic heatwaves on the planet. On July 4, 2019, the state recorded new all-time high temperatures at Kenai, Palmer, King Salmon, and Anchorage International Airport.<sup>36</sup> On December 26, 2021, a tidal station on Kodiak Island recorded a sixty-seven degree reading—a statewide record for the month of December.<sup>37</sup> The Juneau airport and Yakutat saw record high temperatures on multiple days in late May 2022.<sup>38</sup> While review of long-term trends remains important to get a complete picture of how the climate is changing, scientists expect a worldwide increase in the probability of record-high temperatures, especially in high-latitude areas like Alaska because of the Arctic’s rate of warming.<sup>39</sup>

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killed-1000-people-in-england-and-wales/.

32. *Intense Heatwave Affecting Greenland*, COPERNICUS (July 26, 2022), <https://www.copernicus.eu/en/media/image-day-gallery/intense-heatwave-affecting-greenland>. As a result of this rapid melting of the ice sheet, some of the world’s richest men are funding a treasure hunt of sorts, seeking to find critical minerals that may have the capacity to power hundreds of millions of electric vehicles. See René Marsh, *Billionaires are Funding a Massive Treasure Hunt in Greenland as Ice Vanishes*, CNN (Aug. 8, 2022, 6:17 PM), <https://www.cnn.com/2022/08/08/world/greenland-melting-mineral-mining-climate/index.html>.

33. UW Emergency Management, *Hottest Day Ever in Seattle*, UNIV. OF WASH. (June 28, 2021), [https://www.washington.edu/uwem/2021/07/13/hottest-day-ever-in-seattle-june-\\_\\_-2021/](https://www.washington.edu/uwem/2021/07/13/hottest-day-ever-in-seattle-june-__-2021/).

34. Matthew Singer, *TriMet is Temporarily Suspending All MAX Service Due to Extreme Heat*, WILLAMETTE WEEK (June 27, 2021), <https://www.wweek.com/news/city/2021/06/27/trimet-is-temporarily-suspending-all-max-service-due-to-extreme-heat/>.

35. Schramm P.J. et al., *Heat-Related Emergency Department Visits During the Northwestern Heat Wave – United States, June 2021*, 70 MORB. MORTAL WKLY. REP 2021 1020-1021. DOI: <http://dx.doi.org/10.15585/mmwr.mm7029e1>.

36. *Alaska Heatwave: Anchorage Hits Record Temperature*, BBC NEWS (July 6, 2019), <https://www.bbc.com/news/world-us-canada-48890556>.

37. Mike Ives, *Alaska Records a 67-Degree Day, a December Record*, N.Y. TIMES (Dec. 29, 2021), <https://www.nytimes.com/2021/12/29/us/alaska-record-temperature.html> [<https://perma.cc/AB7C-HPRF>].

38. Mark Sabbatini, *Record Heat Wave Hits Juneau*, JUNEAU EMPIRE (June 1, 2022, 6:25 PM), <https://www.juneauempire.com/news/record-heat-wave-hits-juneau/> [<https://perma.cc/RPX2-A3CJ>].

39. Sabine Poux, *The Pacific Northwest Heat Dome Just Skirted Southeast. What Will Alaska’s Own Extreme Heat Waves Look Like?*, ALASKA PUB. MEDIA (July 21, 2021), <https://alaskapublic.org/2021/07/21/the-pacific-northwest-heat-dome-just-skirted-southeast-what-will-alaskas-own-extreme-heat-waves-look-like/> [<https://perma.cc/2EY9-TY7S>].

A rapid attribution analysis of the 2021 Pacific Northwest heatwave concluded that its occurrence was “virtually impossible without human-caused climate change.”<sup>40</sup> Therefore, days with record-breaking high heat, along with other extreme weather events, are likely to continue and intensify with climate change. The urgency with which climate change must be addressed will require bold and innovative solutions and, at times, likely will require compromises and hard choices. In reaching these compromises, many communities and groups disproportionately burdened by environmental decision-making in the past have expressed concern and anger about trade-offs and sacrifices made, including in the recently-passed Inflation Reduction Act.<sup>41</sup> As lawmakers continue to address climate change, striving to promote principles of environmental justice may help ensure a better outcome for a greater number of people. The remainder of this Part will first proceed by describing some specific human and environmental impacts of heat. Then, it will introduce environmental justice as distinct from—but related to—traditional environmental law and outline certain elements of justice that can be used to assess various legal and policy tools, like PPPs, that could play a role in our broader efforts to address climate change impacts.

#### A. Human Health & Environmental Impacts of Hazardous Heat

Hazardous heat events will continue to trigger human health impacts, often exacerbating underlying conditions. Unfortunately, these heat events can lead to deaths. In its Sixth Assessment Report, the Intergovernmental Panel on Climate Change observed that “[t]here is nearly universal evidence that non-optimal ambient temperatures increase mortality.”<sup>42</sup> After the 2021 hazardous heat events in the Pacific Northwest, the New York Times reviewed mortality data provided to the Centers for Disease Control and Prevention and determined that “about 600 more people died than would have been typical” during the week of

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40. Sjoukje Y. Philip et al., *Rapid Attribution Analysis of the Extraordinary Heatwave on the Pacific Coast of the US and Canada June 2021*, EARTH SYS. DYNAMICS DISCUSSIONS, 1 (2021), <https://doi.org/10.5194/esd-2021-90> (last visited Sept. 5, 2022) [<https://perma.cc/7TAT-FUY7>].

41. Rebecca Hersher, *The Spending Bill Will Cut Emissions, but Marginalized Groups Feel They Were Sold Out*, NAT'L PUB. RADIO (Aug. 17, 2022), <https://www.npr.org/2022/08/17/1117725655/the-spending-bill-will-cut-emissions-but-marginalized-groups-feel-they-were-sold>.

42. BRIAN O'NEILL ET AL., KEY RISKS ACROSS SECTORS AND REGIONS IN CLIMATE CHANGE 2022: IMPACTS, ADAPTATION, AND VULNERABILITY 2426 (H.O. Pörtner et al. eds., 2022), [https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC\\_AR6\\_WGII\\_Chapter16.pdf](https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter16.pdf) [<https://perma.cc/CN5V-3CBV>].

the heatwave.<sup>43</sup> Tragically, most heat-related deaths are preventable.<sup>44</sup>

Heat-related health impacts extend beyond mortality. For example, when the human body loses the ability to regulate its internal temperature due to higher heat conditions, resulting effects may include heat stroke and hyperthermia.<sup>45</sup> Hazardous heat can also exacerbate underlying chronic health conditions, like diabetes and cardiovascular conditions, and can disrupt sleep and impair cognitive function.<sup>46</sup> Further, extreme heat has been associated with increased “crime, anxiety, depression, and suicide.”<sup>47</sup>

While hazardous heat has the potential to affect everyone, certain groups are more susceptible to its harms. Young children, elderly people, and pregnant women are at an increased risk; recent studies have even found an association between higher temperatures and premature births.<sup>48</sup> Farmworkers, construction workers, and others who work outdoors performing strenuous, active tasks are at high risk of suffering heat-related illnesses.<sup>49</sup> People who work indoors in similarly strenuous jobs are also at risk.<sup>50</sup> Incarcerated people face a compound set of risks from hazardous heat. Adults in prisons report heart-related health issues, asthma, and diabetes at higher rates than a standard, non-institutionalized population; the facilities are often overcrowded and lack adequate ventilation, and, due to the nature of incarceration, there is no opportunity to leave and seek refuge.<sup>51</sup> Unsurprisingly, many of those

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43. Nadja Popovich & Winston Choi-Schagrin, *Hidden Toll of the Northwest Heat Wave: Hundreds of Extra Deaths*, N.Y. TIMES (Aug. 11, 2021), <https://www.nytimes.com/interactive/2021/08/11/climate/deaths-pacific-northwest-heat-wave.html> [<https://perma.cc/YBC8-TU4G>].

44. *Id.*

45. Kristie L. Ebi et al., *Hot Weather and Heat Extremes: Health Risks*, 398 LANCET 698, 698, 703 (2021).

46. *Id.* at 701.

47. Raymond Zhong, *How Extreme Heat Kills, Sickens, Strains, and Ages Us*, N.Y. TIMES (June 13, 2022), <https://www.nytimes.com/2022/06/13/climate/extreme-heat-wave-health.html> [<https://perma.cc/BU82-M2YN>] (explaining harms to the human body caused by heat like aging, kidney failure, and cardiovascular collapse). See also Radhika Khosla et al., *Health Risks of Extreme Heat*, BMJ 2021 (Oct. 7, 2021), <https://doi.org/10.1136/bmj.n2438> (examining physiological impacts of extreme heat).

48. Christopher Flavelle, *Climate Change Tied to Pregnancy Risks, Affecting Black Mothers Most*, N.Y. TIMES (June 18, 2020), <https://www.nytimes.com/2022/06/13/climate/extreme-heat-wave-health.html> [<https://perma.cc/VWM9-UAUB>].

49. See Ebi et al., *supra* note 45 (discussing heat exposure of outdoor workers).

50. *Id.*

51. Julianne Skarha et al., *An Overlooked Crisis: Extreme Temperature Exposures in Incarceration Settings*, 110 AM. J. PUB. HEALTH PERSPS. (SUPPLEMENT) 1 S41, S42 (Jan. 22, 2020), <https://ajph.aphapublications.org/doi/epdf/10.2105/AJPH.2019.305453>.

most vulnerable to the impacts of hazardous heat are already disproportionately affected by pollution and other environmental stressors.<sup>52</sup>

The impacts of hazardous heat are not limited to those experienced by humans. Animal and plant species—indeed, entire ecosystems—are affected by high heat conditions.<sup>53</sup> Indigenous people and Alaska’s salmon species have maintained a close relationship for thousands of years, with salmon contributing to the physical, cultural, economic, and spiritual well-being of many Alaska Natives and their villages and communities.<sup>54</sup> Salmon and other commercial fishing are a key economic driver for the state.<sup>55</sup> This year’s chinook and chum counts are the lowest and second-lowest on record respectively, and researchers theorize that marine heat waves are a likely cause.<sup>56</sup> Some species, like herring, thrive in warmer water and have been proliferating during recent heat waves while others, including some seabirds and humpback whales in Prince William Sound, have been reported to be declining in recent warm spells.<sup>57</sup> The 2021 Pacific Northwest heatwave was so intense that it triggered two “ice quakes” near Juneau.<sup>58</sup> Heat has the potential to impact

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52. See, e.g., Jackson Voelkel et al., *Assessing Vulnerability to Urban Heat: A Study of Disproportionate Heat Exposure and Access to Refuge by Socio-Demographic Status in Portland, Oregon*, 15 INT’L J. ENV’T. RSCH. & PUB. HEALTH 640, 640 (2018), <https://doi.org/10.3390/ijerph15040640> (illustrating the heightened risk of heat exposure for disadvantaged populations).

53. Robert M. Suryan et al., *Ecosystem Response Persists After a Prolonged Marine Heatwave*, 11 SCI. REPS. (Mar. 18, 2021), at 1, <https://doi.org/10.1038/s41598-021-83818-5>.

54. Carothers, C. et al., *Indigenous Peoples and Salmon Stewardship: A Critical Relationship*, 26 ECOLOGY AND SOCIETY 1, 16 (2021). <https://doi.org/10.5751/ES-11972-260116>.

55. Bob King et al., *Alaska’s Wild Salmon*, Alaska Department of Fish and Game, 44 (2019).

56. Victoria Petersen, *As Waters Warm: Alaska Experiences Salmon Booms and Busts*, HIGH COUNTRY NEWS (July 22, 2022), <https://www.hcn.org/articles/north-fish-as-waters-warm-alaska-experiences-salmon-booms-and-busts> [<https://perma.cc/CEV4-S5EJ>] (explaining how, during marine heat waves, chum eat prey that is easier to catch but less calorie-dense, and that drought-lowered water levels in spawning grounds likely contributed to lower chinook counts). Multiple factors may affect the size and health of salmon populations. *Id.* In addition to temperature, many people think that commercial fishing and fishery management also influences whether a given area sees an increase or a decline in population. *Id.* To further complicate the issue, warmer water may be helping some salmon populations; in Bristol Bay, fishers harvested an all-time record of 57 million sockeye salmon this year. *Id.*

57. Sabine Poux, *Past Heat Waves and Low Sea Ice Continued to Impact Alaska’s Waters in 2021*, ALASKA PUB. MEDIA (Jan. 21, 2022), <https://alaskapublic.org/2022/01/21/past-heat-waves-and-low-sea-ice-continued-to-impact-alaskas-waters-in-2021/> [<https://perma.cc/YPE5-N33S>].

58. An ice quake, or cryoseism, occurs when ice rapidly expands due to sudden warm temperatures and is unable to accommodate the increased volume.

living beings and the environment so significantly that states may regulate thermal discharges as a “pollutant” in impaired waters pursuant to the Clean Water Act.<sup>59</sup> Because hazardous heat poses such a danger, legal tools aimed at mitigating its impacts—like PPPs—could be an important part of Alaska’s response to this threat.

Communities have relied on PPPs to address other environmental and climate change challenges. In a recent article, Jessica Grannis details the roles that conservation and community land trusts play in advancing climate solutions, from undertaking climate mitigation efforts and promoting resilient landscapes to supporting affordable housing and green stormwater infrastructure.<sup>60</sup> According to Grannis, two features of conservation and community land trusts that make them powerful partners to address climate change are (1) community empowerment and control and (2) giving voice to the environment and future generations.<sup>61</sup> These features, when paired with the characteristics of successful PPPs discussed in Part III, might serve as a guide for parties seeking to address hazardous heat in innovative ways.<sup>62</sup>

## B. Environmental Law & Justice

In searching for solutions to hazardous heat, one logical starting point is environmental law. Compared to other areas of law in the United States, modern environmental law is still fairly young. Although certain mainstays, like the public trust doctrine, are rooted in older common law concepts, the agency-driven statutes and regulations we typically consider emblematic of environmental law have only existed for a half-

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Ed Browne, *What Is An Ice Quake? Alaska Hit With Cryoseism Amid Northwest Heat Wave*, NEWSWEEK (July 1, 2021, 11:24 AM), <https://www.newsweek.com/ice-quakes-explained-alaska-hit-cryoseism-northwest-heatwave-1606044> [<https://perma.cc/66B9-AJRA>].

59. 33 U.S.C. § 1313(d); see also EPA, *TMDL for Temperature in the Columbia and Lower Snake Rivers* (May 12, 2020), <https://www.epa.gov/columbiariver/tmdl-temperature-columbia-and-lower-snake-rivers> [<https://perma.cc/KX7L-8LY2>] (last visited Sept. 5, 2022) (“A TMDL is a calculation that identifies the amount of a pollutant (in this case, heat) that a river or other waterbody can receive and still meet specific standards developed by a state or tribe to protect water quality.”).

60. Jessica Grannis, *Community-Driven Climate Solutions: How Public-Private Partnerships with Land Trusts Can Advance Climate Action*, 44 WM. & MARY ENV’T. L. & POL’Y REV. 701, 714–33 (2020). The Bristol Bay Land Trust in Alaska is one such example of the types of trusts discussed in the Grannis piece. BRISTOL BAY HERITAGE LAND TRUST <http://bristolbaylandtrust.org/> (last visited Dec. 6, 2022).

61. *Id.* at 712–14 (describing unique aspects of community land trusts).

62. For example, one suggested approach to addressing hazardous heat involves creating additional parks and green spaces to reduce heat islands in urban areas. See, e.g., Farshid Aram et al., *Urban Green Space Cooling Effect in Cities*, 5 HELIYON 4, 3–4 (2019).

century or less.<sup>63</sup>

The body of statutes, rules, and common law concepts that lawyers and policymakers consider “environmental law” is often used to answer two core questions: how much pollution or degradation should we allow, and where should we allow it? These questions might be answered by looking to permitting schemes with enforceable limits,<sup>64</sup> and planning statutes that require agencies to “look before they leap” when they are evaluating projects that propose to have significant impacts on the environment.<sup>65</sup> Other ways to answer these questions involve considering whether a given area provides critical habitat for sensitive plant and animal species (and should thus be sheltered from too much human interference),<sup>66</sup> and balancing competing interests in the management of public lands.<sup>67</sup>

Although “traditional” or “mainstream” environmental law can be helpful in managing the location and quantities of pollution and degradation we allow, it is not a perfect system. For one thing, the regime tends to accept as a given that the systems of production underpinning our economy will generate pollution that must be placed somewhere. The Clean Water Act, which set as national policy the goal of eliminating pollution from our nation’s waters by 1985,<sup>68</sup> also creates a permitting scheme whereby pollutants may be lawfully added to waters so long as the permittee adheres to agreed-upon terms.<sup>69</sup> Thus, for people who seek to challenge the existing paradigms around, *inter alia*, resource extraction, industrial agriculture and food production, or manufacturing, these mainstream laws and rules may be disappointing.

Another feature of mainstream environmental laws that limits their utility is that they were generally premised on a definition of the “environment” that differs from that held by many people (both at the time of their enactment and today). Some leaders of mainstream environmentalism in the early and mid-twentieth century believed that

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63. Richard J. Lazarus, *The Greening of America and the Graying of United States Environmental Law*, 20 VA. ENV’T. L.J. 75, 76 (2001).

64. *See, e.g.*, 33 U.S.C. §§ 1251-1388 (sections of Clean Water Act establishing National Pollutant Discharge Elimination System permitting program); 42 U.S.C. § 7661a(d) (section of the Clean Air Act requiring states to develop a permit program).

65. National Environmental Protection Act of 1969, 42 U.S.C. §§ 4331-32.

66. Endangered Species Act of 1973, 16 U.S.C. §§ 1531-35.

67. Federal Land Policy and Management Act of 1976, 43 U.S.C. § 1701.

68. Clean Water Act of 1977, Pub. L. No. 92-500, 86 Stat. 816 (1972) (“[I]t is the national goal that the discharge of pollutants into the navigable waters will be eliminated by 1985[.]”).

69. *Id.* (explaining that an Administrator may issue a permit for the discharge of a pollutant so long as all applicable requirements outlined in listed sections are met).

the “environment” was a wild, unspoiled place that people could visit to create and experience nature, and that a clear binary existed between the natural and the artificial.<sup>70</sup> This binary is reflected in the Wilderness Act, which contains a definition of “wilderness” as an “area untrammeled by man.”<sup>71</sup>

Scholars embracing “environmental justice” tend to hold a different, human-centric idea about what constitutes the “environment.” In their book *From the Ground Up*, Luke Cole and Sheila Foster explain that the environment is “where we live, where we work, where we play, and where we learn.”<sup>72</sup> Likewise, Dr. Robert Bullard, widely regarded as the “father of environmental justice,” has explained that “the environment is everything [including] the physical and natural world. Therefore, we cannot separate the physical environment from the cultural environment.”<sup>73</sup> While this understanding of the “environment” may not be fully reflected in the United States’ legal system, it aligns with views and traditions of many cultures and communities.<sup>74</sup>

Most definitions of “environmental justice” focus in some part on the distribution of environmental burdens and benefits along racial and economic lines.<sup>75</sup> But other aspects of justice are emphasized as well. To aid in understanding the “justice” component of the term, Professor Robert Kuehn’s “A Taxonomy of Environmental Justice” is instructive. Kuehn articulates four modes of justice—distributive, procedural, corrective, and social—and provides examples of each.<sup>76</sup> The U.S. Environmental Protection Agency and some state governments have embraced the idea that environmental justice means that all people should experience “fair treatment” and “meaningful involvement” in the environmental decision-making process.<sup>77</sup>

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70. Jedediah Purdy, *THE LONG ENVIRONMENTAL JUSTICE MOVEMENT*, 44 *Ecology L.Q.* 809, 835–37 (2018).

71. Wilderness Act of 1964, 16 U.S.C. § 1131(c).

72. LUKE W. COLE & SHEILA R. FOSTER, *FROM THE GROUND UP: ENVIRONMENTAL RACISM AND THE RISE OF THE ENVIRONMENTAL JUSTICE MOVEMENT* 16 (2001).

73. Errol Schweizer, *Environmental Justice: An Interview with Dr. Robert Bullard*, *EARTH FIRST! J.* (July 1999), <https://www.ejnet.org/ej/bullard.html> [<https://perma.cc/FPT7-EV3U>].

74. See, e.g., Joseph P. Brewer II and Elizabeth Ann Kronk Warner, *Protecting Indigenous Knowledge in the Age of Climate Change*, 27 *GEO. INT’L ENVTL. L. REV.* 585, 598 (2015).

75. See, e.g., Clifford J. Villa, *Remaking Environmental Justice*, 66 *LOY. L. REV.* 469, 477–78 (2020) (outlining various efforts to define “environmental justice”); Robert W. Collin, *Environmental Justice in Oregon: It’s the Law*, 38 *ENV’T. L.* 413, 414–17 (2008) (detailing state efforts to define and promote environmental justice).

76. Robert R. Kuehn, *A Taxonomy of Environmental Justice*, 30 *ENV’T L. REP.* 10681, 10681 (2000).

77. U.S. E.P.A., *Environmental Justice* (Aug. 19, 2022), <https://www.epa.gov/environmentaljustice>; see also Collin, *supra* note 75, at 450

Drawing upon the work of leaders in the environmental justice movement, scholars and policymakers have incorporated environmental justice principles into their proposals for addressing a range of environmental challenges.<sup>78</sup> For example, Colorado recently overhauled its approach to regulating the oil and gas industry with an increased focus on protecting public health.<sup>79</sup> As part of the permit application and location approval process, mineral companies and the state regulatory agency must consider impacts of a proposed drilling site on disproportionately impacted communities.<sup>80</sup> Climate change poses a particularly complex and massive environmental challenge and demands creativity, innovation, and bold action. It is clear that environmental law void of consideration of environmental justice is not fully equipped to meet this task in an equitable way. The challenges of climate change are magnified in a place like Alaska, with its many miles of coastline, large swaths of permafrost, and the oil and gas industry's public stance on climate change. As hard decisions inevitably must be made, it is important that policymakers not lose sight of environmental justice.

### III. UNDERSTANDING SUCCESSFUL & UNSUCCESSFUL PUBLIC-PRIVATE PARTNERSHIPS

In this Article, we explore whether, and to what extent, public-private partnerships may help address climate change impacts like hazardous heat through an environmental justice lens. Before discussing a particular PPP attempting to address an identified and currently unmet need that is likely the result of climate change, this Part identifies and explores the basics of PPPs.

It is critical to define PPPs so that not all contractual relationships between a private entity and a public entity are framed as a "public-private partnership."<sup>81</sup> At its core, "[a] PPP is a collaboration between

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(discussing emphasis on public participation and providing examples of ways that the public may engage with decision-makers and processes).

78. See generally Grannis, *supra* note 60, at 712-13 (discussing ways that land trusts increase community empowerment and control, especially in communities that have historically been marginalized or underrepresented in climate change discussions); Catherine Millas Kaiman, *Environmental Justice and Community-Based Reparations*, 39 SEATTLE U. L. REV. 1327, 1358 (2016) (proposing federal, state, and local reparations programs for addressing environmental harms to communities).

79. Colo. S.B. 19-181, amending the Oil and Gas Conservation Act (Apr. 16, 2019).

80. 2 COLO. CODE REGS. §§ 404-1-100; 404-1:304.b.(2)B-C (defining "Disproportionately Impacted Community" and requiring identification, mapping, and outreach planning for any disproportionately impacted community as part of certain alternative location analyses).

81. See Stuart C. Mendel & Jeffrey L. Brudney, *Putting the NP in PPP*:



multiple [private and public] stakeholder organizations . . . to achieve a shared goal that is beyond the capability of any one stakeholder.”<sup>82</sup> The omitted part of this definition states that “at least one nonprofit or 501(c)(3) organization” is involved, yet the authors of this definition omitted that part, because even that is not completely settled within the literature.<sup>83</sup> There is disagreement about whether “private” does (or should) include nonprofit organizations alongside for-profit organizations.<sup>84</sup> Similarly, how one should define “public” is also uncertain.<sup>85</sup> In some literature, “public” is defined narrowly as “national governments or [intergovernmental organizations].”<sup>86</sup> A broader definition would encompass, for example, a collaboration between the University of Michigan Library (UML), a public institution, and Google Inc. (Google), a private corporation.<sup>87</sup>

Beyond identifying and classifying basic partners and stakeholders, motivations for forming a partnership will differ between the parties and stakeholders. The context within which the motivation arises will also differ. Let’s take the partnership between UML and Google as a relatively easy example to set forth differing motivations. With the identified unmet need of book preservation and providing access to books for people with disabilities, UML’s motivation for the partnership with Google was threefold. In a speech given by Mary Sue Coleman, then the president of the University of Michigan, to the American Association of Publishers, Coleman explained:

The University of Michigan’s partnership with Google offers three overarching qualities that help fulfill our mission: the preservation of books; worldwide access to information; and, most importantly, the public good of the diffusion of knowledge. . . . We are the repository for the whole of human

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*Considering the Role of Nonprofit Organizations in Public Private Partnerships*, 35 PUB. PERFORMANCE & MGMT. REV. 617, 617–18 (2012) (“It is often difficult to know when and where casual private conversations among public and private community leaders, power brokers, and others cross over the threshold of informality to a more formal public-private partnership.”) (citation omitted).

82. Kimberly E. Maxfield et al., *The Role of Public-Private Partnerships in Catalyzing the Critical Path*, 10 CLINICAL & TRANSLATIONAL SCI. 431, 431 (2017).

83. See Chon, *supra* note 1, at 14 (“Does (or should) the ‘P’ in private include nonprofit as well as for-profit partners?”).

84. *Id.* at 13.

85. See *id.* (“To begin with a foundational (and contested) question, how does (or should) the ‘P’ representing the public – whether national governments or INGOs – participate as a ‘partner?’”).

86. *Id.*

87. See Levine, *supra* note 4, at 199 (identifying UML as “a public research university serving multiple stakeholders and Google as a private corporation with a duty to its shareholders”).

knowledge, and we must safeguard it for future generations. It is ours to protect and to preserve.<sup>88</sup>

This is what we might expect from a cultural institution like a library: there is the primary focus on preservation and access for the public good and public future. As for Google, like other private companies, it has a fiduciary duty to its shareholders to discharge its duties in good faith and inherent fairness. When Google approached UML to collaborate on this project, it offered UML the opportunity to utilize Google's technology, platform, and immense resources by scanning materials through Google's Book Search.<sup>89</sup> Although Google may have had secondary aims similar to UML, its primary motivation was likely to expand the use and prominence of its search engine and further assure the future use of its proprietary tools.<sup>90</sup>

Despite these different motivations, UML and Google were able to collaborate in a way that was mutually beneficial and met their agreed-upon goal. UML needed Google's resources to get its collection online, and Google wanted a library like UML to use its resources to further increase its position in the marketplace.<sup>91</sup> They could not achieve this result—scanning an entire library—without one another. This type of collaboration demonstrates the ways in which PPPs can be effective.

Of course, the UML-Google example is just the tip of the metaphorical iceberg in terms of complexity and driving external factors that may make it difficult for the parties to achieve their identified mission. The UML-Google PPP is a relatively straightforward example of an effective PPP.

An obvious, more complex example in Alaska is a PPP that addresses the consequences of climate change. In a state dominated by the oil and gas industry, with remote regions and various tribal nation local governance structures, a PPP is needed to combat the ever-increasing heat waves. Yet, it will undoubtedly face great political pressure, access challenges due to physically remote spaces, and financial, technological, and meteorological risks and uncertainties.

It is important to note here that some scholars "hold the view that PPPs simply 'do not work' because of the incongruence of objectives of the public and private sectors."<sup>92</sup> In a series of case studies of PPPs in

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88. Kevin Bergquist, *Google Project About Public Good*, UNIV. REC. (Feb. 6, 2006), <https://record.umich.edu/articles/google-project-about-the-public-good/> (reporting on University of Michigan President Coleman's address to the Association of American Publishers).

89. See Levine, *supra* note 4, at 200-01.

90. See *id.*

91. See *id.*

92. See, e.g., Jomo et al., *supra* note 12, at 1 ("[T]he AAAA confirms the need

Canada involving projects ranging from water treatment plants to bridges to social services to hospital food, the authors concluded that the purported benefits of the PPPs—such as saving taxpayer money and providing more efficient delivery of services—were ideological assertions and primarily empty promises.<sup>93</sup> This exact sentiment—that PPPs simply do not work—is why PPPs must be studied further, particularly in regions like Alaska that bring a unique context to the partnership.

The remainder of this Part will seek to better explain three key characteristics of a successful partnership that operates in a context like the one outlined above. It will then analyze where complex partnerships have gone wrong and propose the ways in which their failures may guide the work of PPPs in Alaska and elsewhere.

### A. Key Characteristics of Successful PPPs

Three key characteristics of successful partnerships are: (1) a robust precompetitive research period that results in meaningful deliverables, (2) accountability, and (3) the sharing and/or transfer of different types of risk. This Part will briefly explore each of these characteristics.

To start, successful PPPs conduct some sort of formal early due diligence process where the parties come together to share their knowledge and think through the various potential iterations and risks of their partnership. In the biomedical field, this is sometimes referred to as “precompetitive research.”<sup>94</sup> The term “precompetitive” refers to the common occurrence when two or more stakeholders are in fact competitors seeking to work together, even if just for initial research.<sup>95</sup> Yet, this term more generally also includes stakeholders that may have different business interests. When there is a combination of a public entity, like a state government, and a private entity, like a for-profit company, there will be different business interests. The purpose of this early research is to bring together and share resources, existing knowledge, and data to further develop a collaborative knowledge base,

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for private and public partners to be thoughtful in the design and implementation of PPPs to prevent pitfalls from the past . . .”).

93. *Id.*

94. Maxfield, *supra* note 82 at 431

95. *Id.* at 431 (“PPP members conduct ‘precompetitive research,’ whereby stakeholders, who may be competitors or have different business interests, share resources and nonproprietary data to develop knowledge, insights, and strategies to address the identified unmet need.”); see also Hilde Stevens et al., *Perspectives and Opportunities for Precompetitive Public-Private Partnerships in the Biomedical Sector*, 32 BIOTECHNOLOGY L. REP. 132, 132 (2013) (“[S]haring knowledge with competitors at the precompetitive—and even competitive stage—is increasingly considered to be both relevant and viable”).

insights, and strategies that will further define the identified unmet need.<sup>96</sup> This research results in valuable deliverables that help to refine the scope of the unmet needs, create best practice recommendations, and further identify and plan for potential pitfalls or other uncertainties.<sup>97</sup> This is important, as a defining trait of PPPs is that they are formed and operated to remedy, at least in part, a market failure.<sup>98</sup> Understanding the extent and reasons for this market failure is a basic first step the partners must take together.

As a part of this early research—or, ideally, even before it—the parties and relevant stakeholders need to ensure that there are not other perspectives missing, so that they can understand whether the identified unmet need is really an unmet need. For example, in the environmental justice space, there is particular concern that the stakeholders that have identified an unmet need of the community have not, in fact, included parts of the community in this identification and planning process. This may result in identifying the wrong need or failing to understand that the proposed solution is not a favorable solution for all represented (and unrepresented) interests. In a recent case study that analyzed ten PPPs across the education, energy, healthcare, transportation, and water and sanitation sectors, nine out of the ten PPPs studied either failed to consult with affected communities or failed to provide transparency to those affected communities, or both.<sup>99</sup>

Beyond conducting early research, another key characteristic of successful PPPs is accountability. This is so critical that some definitions of PPPs, including the United Nations', include it as a central feature.<sup>100</sup> Stemming from conversations at the Third International Conference on Financing for Development, held in Addis Ababa, Ethiopia, the Addis Ababa Action Agenda (AAAA) highlights the desire for more “[a]ccountability [as] a response to the concerns of governments as well as many civil society organizations and public sector unions regarding the public sector costs and risks associated with many PPPs.”<sup>101</sup>

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96. Maxfield, *supra* note 82 at 431.

97. See, e.g., Jomo et al., *supra* note 12, at 1 (“[T]he AAAA confirms the need for private and public partners to be thoughtful in the design and implementation of PPPs to prevent pitfalls from the past . . .”).

98. See Frederick M. Abbott, *Public-Private Partnerships as Models for New Drug Research and Development: The Future Is Now*, in THE CAMBRIDGE HANDBOOK ON PUBLIC-PRIVATE PARTNERSHIPS, INTELLECTUAL PROPERTY GOVERNANCE, AND SUSTAINABLE DEVELOPMENT 29, 36 (Margaret Chon et al. eds., 2018).

99. *History RePPeated - How Public Private Partnerships Are Failing*, GREEN POL. FOUND. (Nov. 19, 2009), <https://www.boell.de/en/2018/12/11/history-repppeated-how-public-private-partnerships-are-failing>.

100. See, e.g., Jomo et al., *supra* note 12, at 4, Table 1.

101. *Id.* at 1.

Accountability is important for a number of reasons, including, for example, transparency about how money is spent, what actors are involved in decision-making, and what risk is on the public compared to the private entities.

Accountability may come in different forms. This is expected due to the unique nature and context of each PPP. As noted above, each partner in a PPP enters the relationship with its own motivation, resources, and responsibilities to its stakeholders. The public sector in particular must develop a toolkit, or at least a best practices manual (which it should do in its early research), as a way to assess its comparative strengths and weaknesses and how it must therefore plan to account for these strengths and weaknesses to its constituents. For example, accountability may occur through some sort of “performance-disciplining measures . . . that may guard against inefficiency, waste, and corruption.”<sup>102</sup> The term “mutual accountability” can be used to explain accountability between the partners, but also the accountability more generally to the public by the partners. “Accountability has long been recognized as the cornerstone of successful public management.”<sup>103</sup>

One example of a PPP that seeks to provide its constituents with transparency and accountability is Indiana’s economic development PPP—the Indiana Economic Development Corporation (IEDC). This PPP uses what it terms a “transparency portal,” which provides data on economic development projects that it undertakes.<sup>104</sup> Included in this page are also links to financial and legislative reports and to board meetings and committee meeting minutes, creating mutual accountability between its partners and the public.<sup>105</sup>

Finally, successful PPPs must share and/or transfer risk, including reputational risk and investment risk. This does not mean that financial inputs, for example, must be equally shared, but there should be shared or compatible costs for failures and reciprocal gains for successes. Like with mutual accountability, sharing risk is seen as so crucial that this characteristic is often included in the basic definition of a PPP.<sup>106</sup> This

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102. Abbott, *supra* note 98, at 37.

103. John Forrer et al., *Public-Private Partnerships and the Public Accountability Question*, 70 PUB. ADMIN. REV. 475, 477 (2010), <https://sites.duke.edu/niou/files/2011/05/Forrer-Lee-Newcomer-and-Boyer-Public-Private-Partnership-and-the-Public-Accountability-Question.pdf>.

104. See generally *Welcome to IEDC’s Transparency Portal*, IND. ECON. DEV. CORP., <https://secure.in.gov/apps/iedc/transparencyportal/home>.

105. See *id.*

106. See Jomo et al., *supra* note 12, at 4, Table 1 (listing different definitions of PPPs, including the Treasury’s definition that states a PPP is “[a]n arrangement between two or more entities that enables them to work cooperatively towards shared or compatible objectives and in which there is some degree of shared

particular characteristic, risk allocation and sharing, is viewed as a driving motivation for public entities to engage in a partnership with a private entity.<sup>107</sup> Indeed, some scholars have the view that “[a]ll [PPP] projects are founded on the concept of [at least some] risk transfer from the government to a private-sector participant—the contract participant best suited to manage the risk.”<sup>108</sup>

The importance of sharing or transferring some of the risk cannot be emphasized enough here. Recall the reason that these parties are coming together in the first instance. They have identified an unmet need that no party can meet by itself. Just as parties should agree to assume the duties for which they are best suited, so too should they assume the associated risks.

Beyond transferring risk, the emphasis on sharing risk is also important. On one hand, public entities are motivated to offset or transfer risk to the private entity and often cite risk transfer as a reason for the partnership. Yet, on the other hand, case studies have questioned whether risk was, in fact, effectively transferred to the private partners in the studied projects.<sup>109</sup> If the public entity is not, in fact, transferring or at least sharing the risk, this cost needs to be apparent in the early research and certainly the drafting phase of the PPP. As the next Part will demonstrate, lessons learned from failed PPPs suggest that the failures occurred because of a lack of planning for accountability and/or risk allocation.

## B. Learning from Failed PPPs

Not all PPPs have proven successful. A 2018 report details ten examples of PPPs worldwide that “failed to provide value-for-money, transparency, and/or humane infrastructure projects.”<sup>110</sup> In every single one of the examples provided in this study, the PPP failed to establish a system to combat the result of parties entering into a relationship with different motivations, resources, and responsibilities. This Part examines more closely two PPPs: one in California and one in Indiana.

In the early 1990s, the California Department of Transportation (Caltrans) initiated a series of pilot PPP projects to respond to California’s

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authority and responsibility, joint investment of resources, shared risk taking, and mutual benefit.”).

107. See MICHAEL T. CALLAHAN ET AL., PUBLIC-PRIVATE PARTNERSHIPS, DESIGN BUILD CONTRACTING HANDBOOK § 15.02 (3d ed. 2022) (“[t]he private entity’s bearing of the risk seems to be the key distinction of [PPP]s on which many commentators focus.”).

108. *Id.*

109. See Jomo et al., *supra* note 12, at 1.

110. See *History RePPeated*, *supra* note 99.

growing transportation issues.<sup>111</sup> The programs were designed to alleviate the financial strain and long timelines Caltrans faced in building infrastructure.<sup>112</sup> One of these PPP projects was the construction of express lanes in Orange County on State Route 91 (SR-91).<sup>113</sup> This project brought together a consortium of private investors that financed the \$135 million cost and secured, in exchange, a thirty-five-year concession (in essence, a lease) to operate the tollway.<sup>114</sup> The purpose of building and establishing the toll road was to ease the state's bumper-to-bumper traffic in the middle of SR-91.<sup>115</sup> The project was completed in just under one year, much faster than Caltrans estimated it would have needed to complete the project without involving the private sector.<sup>116</sup> Initially, all was great: drivers were able to pay for a faster road through automated collections and congestion pricing.<sup>117</sup>

Yet when Caltrans and the Orange County Transportation Authority (OCTA) sought to make road repairs and improvements, including adding a lane and improving public transportation, they were unable to do so.<sup>118</sup> The reason: the thirty-five-year lease agreement included a noncompete clause prohibiting the addition of any lanes within the tollway zone, as well as a series of restrictions on maintenance and infrastructure improvements.<sup>119</sup> Just ten years into the thirty-five-year lease the project was a disaster for California. After another ten years of litigation, the OCTA ultimately paid \$207 million to buy the express lanes from the consortium.<sup>120</sup>

What did Caltrans miss in setting up and executing this PPP? Certainly, one can speculate that better precompetitive research should have been conducted. As a result, the partnership agreement could have planned for the downstream needs of the community in which Caltrans serves in Orange County, such as future traffic flow, additional lanes,

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111. MARC SCRIBNER, *THE LIMITATIONS OF PUBLIC-PRIVATE PARTNERSHIPS: RECENT LESSONS FROM THE SURFACE TRANSPORTATION AND REAL ESTATE SECTORS 8-9* (Competitive Enter. Inst. 2011 No. 1) <https://cei.org/wp-content/uploads/2011/01/Marc-Scribner-The-Limitations-of-Public-Private-Partnerships.pdf>.

112. *Id.*

113. *Id.* at 8.

114. *See id.*

115. *Id.*

116. *See id.*

117. *See* Matthew Goldstein & Patricia Cohen, *Public-Private Projects where the Public Pays and Pays*, N.Y. TIMES (June 6, 2017), <https://www.nytimes.com/2017/06/06/business/dealbook/trump-infrastructure-plan-privatized-taxpayers.html>.

118. *See* SCRIBNER, *supra* note 111, at 8.

119. *See id.*

120. *See* Goldstein & Cohen, *supra* note 117.

improvements, and public transportation. This precompetitive research should also have been incorporated into the agreement during the risk allocation process and resulting contractual provisions. Although PPPs are said to transfer risk to the private sector, it was the state that retained the risk that changes to the four-lane toll road would need to be made within the thirty-five-year concession period.<sup>121</sup>

Perhaps critics of PPPs are correct – that the different motivations of Caltrans and the private consortium doomed this PPP from the outset. Caltrans was likely motivated to reduce traffic and improve regional transportation. The private consortium likely wanted to maximize financial returns. Although these motivations are perhaps at odds with one another, the same can be true of successful PPPs. The difference? Caltrans missed an opportunity to start with more inclusive and thorough research that could have better managed the possibility of necessary downstream changes and improvements due to increased traffic, public transportation, and other issues to the finished highway.

The state of Indiana experienced a similar story. Likely due to incomplete early research and shared risk allocation and management, it was required to pay an unexpected \$450,000 to the private operators of a toll road when the state waived tolls during a flood emergency.<sup>122</sup> The partnership between Indiana and the private toll operators, an early example of a PPP in the transportation sector in the U.S., seemingly failed to think through what might happen if the state needed to suspend tolls for an emergency situation. Although the state criticized the required payment, stating, “[y]ou can make money when there’s a flood, but the government looks to save lives,”<sup>123</sup> it may also be fairly criticized for failing to share the risk with the private toll operator that a catastrophic event like a flood would require a quick decision to suspend all tolls. Who bears the revenue risk of disruptions in areas like the marketplace and environment is of the utmost importance to determine in the initial stages of the developing partnership.<sup>124</sup> The California and Indiana cases are instructive: taking more time in the early stages of a relationship to share knowledge and identify and assess risk is worth the delay to avoid years of litigation and massive unexpected payments.

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121. See SCRIBNER, *supra* note 111, at 8 (“[T]he California Assembly passed legislation that authorized the Orange County Transportation Authority (OCTA) to buy out the concessionaire, shut down the protection zone, and eliminate tolls at the end of the 35-year period.”).

122. See Goldstein & Cohen, *supra* note 117.

123. *Id.*

124. *Id.* (“Aaron Renn, a senior fellow with the Manhattan Institute who has studied a number of public-private partnerships . . . [identifies] ‘[t]he most important question’ . . . [as] ‘who bears the revenue risk if certain things happen.’”).



Keeping the three key characteristics—early research, accountability, and risk transfer or sharing—front of mind when planning for a PPP would likely have exposed the conflicting interests and opportunities for waste, inefficiencies, and greed and corruption, that was identified in the 2018 report and is apparent, at least in part, in the two examples above. There are varying ways to conduct early research, provide accountability and transparency, and manage risk. Although the important thing is understanding that all of those key characteristics require taking a step back to remember who the stakeholders are and how to best serve those stakeholders and interests while continuing to meet the mission of the partnership.

#### **IV. PPPS' ABILITY TO ADDRESS HAZARDOUS HEAT IN ALASKA: ALASKA HEAT SMART**

Having reviewed the most common characteristics of successful PPPs and explored reasons for why others failed, this Article now looks at an existing PPP in Alaska to assess whether and how a PPP can be successful in achieving its objectives while furthering aspects of environmental justice, like addressing hazardous heat.

During hazardous heatwaves, residential cooling systems can provide essential relief. But even though residential air conditioning systems may offer a short-term solution in a heatwave, their long-term use exacerbates climate change.<sup>125</sup> Instead of relying on traditional air conditioning systems, many climate scientists and policymakers are turning to the use of heat pumps as cooling mechanisms.<sup>126</sup> Heat pumps can be set up to run in two directions, providing heat in the winter and cooling in the summer.<sup>127</sup> This relatively minor modification could result in long-term utility savings for heat pump users, and, as the electric grid increasingly relies on renewable energy, it would further increase climate benefits.<sup>128</sup>

While most air conditioning manufacturers offer a two-way heat pump version of their air conditioners, they tend to cost several hundred dollars more to make.<sup>129</sup> The up-front cost, coupled with consumer

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125. See generally Eric Dean Wilson, *AC Feels Great, But It's Terrible for the Planet. Here's How to Fix That*, TIME (June 30, 2021), <https://time.com/6077220/air-conditioning-bad-for-planet-how-to-fix/> [<https://perma.cc/4UTD-465M>].

126. See generally Brad Plumer, *Are Heat Pumps the Answer to Heat Waves? Some Cities Think So*, N.Y. TIMES (July 28, 2021), <https://www.nytimes.com/2021/06/30/climate/heat-pumps-climate.html> [<https://perma.cc/3C6U-4AUX>].

127. *Id.*

128. *Id.*

129. *Id.*

confusion about how heat pumps work and widely divergent prices, can prevent people from deciding to install heat pumps in their homes.<sup>130</sup> Mandating adoption through new regulations or offering subsidies to promote installation could counter the higher manufacturing costs that tend to be passed on to consumers.<sup>131</sup>

Alaska Heat Smart, a Juneau-based public-private partnership, was formed to help alleviate consumer confusion about heat pumps and connect interested consumers to available financial support.<sup>132</sup> Alaska Heat Smart is a non-profit organization that has partnered with Alaska Electric Light & Power, the City and Borough of Juneau, the Juneau Economic Development Council, Renewable Juneau, the Southeast Alaska Building Industry Association, and the Alaska Housing Finance Corporation.<sup>133</sup> It was formed after the volunteer board at another, pre-existing non-profit organization, Renewable Juneau, continued to see an unmet need in the heat pump space.<sup>134</sup> Renewable Juneau is an advocacy and education non-profit, with a focus on helping the City and Borough of Juneau meet its goal of powering the capital city with 80 percent renewable energy by 2045.<sup>135</sup> The executive director of Alaska Heat Smart, Andy Romanoff was on the board, and remains on the board, at Renewable Juneau. Indeed, there is much overlap of personnel between the two non-profits. Through Renewable Juneau's work to help income-qualified Juneau households make the switch from oil-based heating systems to hydro-powered air source heat pumps, a program it calls Juneau Carbon Offset Fund, the soon-to-become executive director of Alaska Heat Smart had the opportunity to research and gather information about the community's need for a cheaper and safer heating system.<sup>136</sup>

About two years after Alaska Heat Smart formed, the U.S. Department of Housing and Urban Development (HUD) awarded it \$2 million under HUD's "Healthy Homes" program.<sup>137</sup> With this grant, the

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130. Video Conference Interview with Andy Romanoff, Dir. of Alaska Heat Smart (Nov. 5, 2022) (notes on file with authors).

131. *Id.*

132. Video Conference Interview with Andy Romanoff, *supra* note 130.

133. *A Public-Private Partnership, ALASKA HEAT SMART*, <https://akheatsmart.org/about/partners/> [<https://perma.cc/HN3N-9HLE>] (last visited Sept. 10, 2022).

134. Video Conference Interview with Andy Romanoff, *supra* note 130.

135. Renewable Juneau, About, <https://renewablejuneau.org/about/> (last visited Nov. 23, 2022).

136. Video Conference Interview with Andy Romanoff, *supra* note 130.

137. U.S. DEP'T. OF HOUS. AND URB. DEV., *Region X HUD Highlights: February 2022*, <https://www.hud.gov/states/shared/working/r10/newsletters/newsfeb22> [<https://perma.cc/44KZ-XP8B>] (last visited Sept. 10, 2022).

executive director recently stated that Alaska Heat Smart is “looking at remediating lower income family homes and making them both healthier and safer to those folks who live in them.”<sup>138</sup> Alaska Heat Smart currently has five staff members and is supported by a volunteer board of directors.<sup>139</sup> This is a great expansion, as Romanoff was the sole employee for the first year plus.<sup>140</sup>

Its current services include a free home heat pump assessment designed to help residents “make informed decisions about [their] heating options.”<sup>141</sup> After this assessment, Alaska Heat Smart works to help residents understand bids received from contractors and identify financing options.<sup>142</sup> Beyond these services, the non-profit has also partnered with a local credit union to provide qualifying Juneau residents low-cost loans for heat pump installations.<sup>143</sup> Ideally, residents can secure loans with an interest rate low enough that the interest paid will be far less than the heating bill savings realized from installing an air source heat pump.<sup>144</sup> And, to further offset residents’ costs, Alaska Heat Smart has recently begun a Department of Energy-funded initiative to help lower-income residents overcome initial purchase and installation expenses.<sup>145</sup> Finally, Alaska Heat Smart is also a source of information regarding other similar programs that are uniquely seeking to aid those households that earn less than 125 percent of median area income.<sup>146</sup> As Romanoff explained, informal, word-of-mouth marketing is often the primary method of information sharing in a small community like Juneau, and has been critical to Alaska Heat Smart’s community outreach efforts.<sup>147</sup>

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138. Jeremy Hsieh, *HUD Awards \$4m to Make Homes in Juneau and Southwest Safer* KTOO (Jan. 29, 2022), <https://www.ktoo.org/2022/01/29/hud-awards-4m-to-make-homes-in-juneau-and-southeast-safer/>.

139. *Staff and Board*, ALASKA HEAT SMART, <https://akheatsmart.org/about/staff-and-board/> (last visited Sept. 10, 2022).

140. Video Conference Interview with Andy Romanoff, *supra* note 130.

141. *Home Heat Pump Assessment*, ALASKA HEAT SMART, <https://akheatsmart.org/programs/heat-pump-home-assessment/> (last visited Sept. 10, 2022).

142. *Id.*

143. *Heat Pump Loan Program*, ALASKA HEAT SMART, <https://akheatsmart.org/programs/heat-pump-loan-program/> (last visited Sept. 10, 2022).

144. *Id.*

145. Romanoff, *supra* note 130.

146. *See Healthy Homes and Heat Pump Assistance Programs*, ALASKA HEAT SMART, <https://akheatsmart.org/healthy-homes-heat-pump-assistance-programs/> (last visited Sep. 10, 2022) (describing assistance programs).

147. Romanoff, *supra* note 130.

### A. Alaska Heat Smart and Environmental Justice

Using Robert Kuehn's taxonomy as a reference, the Alaska Heat Smart partnership appears to further environmental justice in two primary ways. First, Alaska Heat Smart's goal of reducing the cost of heating in Juneau using renewable energy powered heat pumps and improved building energy efficiency<sup>148</sup> is consistent with the concept of distributive justice. Distributive justice is focused on fairly distributed outcomes rather than the process involved in arriving at those outcomes.<sup>149</sup> An examination of distributive justice reviews whether the burdens of an environmental stressor like heat are borne more heavily by certain populations, typically communities of color, lower-income communities, and people who are vulnerable in other ways.<sup>150</sup> Distributive justice also exists where environmental benefits—like affordable, environmentally-friendly cooling systems—are shared among all groups.<sup>151</sup> Here, the Alaska Heat Smart program and its "Thermalize Juneau" initiative is designed to support households that otherwise may not be able to afford to install a new two-way cooling system.<sup>152</sup> If Alaska Heat Smart's initiative is successful, the overall health impacts that hazardous heat posed to Juneau residents could be reduced. Additionally, as households everywhere adopt more efficient heating and cooling methods that can operate on renewable electricity, greenhouse gas emissions are reduced which, in turn, decelerates the changing climate.

Second, Alaska Heat Smart's program furthers social justice aspects of environmental justice. As Kuehn explains, this aspect of justice reflects the reality of people's experiences: it is difficult to separate one's lack of access to clean drinking water with limited job opportunities and underfunded schools.<sup>153</sup> Some of the same racial, economic, and political factors that affect the degree of environmental harm a community experiences probably also explain some portion of other social problems, like a lack of affordable housing or jobs that pay a livable wage.<sup>154</sup> In materials launching the "Thermalize Juneau" initiative, Alaska Heat

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148. See *About, ALASKA HEAT SMART*, <https://akheatsmart.org/about/> (last visited Sept. 10, 2022) (describing Alaska Heat Smart's mission).

149. Kuehn, *supra* note 76, at 10684.

150. *Id.*

151. See *id.* (describing the impact of environmental justice).

152. See *Thermalize Juneau, ALASKA HEAT SMART*, <https://akheatsmart.org/programs/thermalize-juneau/> (last visited Sept. 11, 2022) (describing the Thermalize Juneau project).

153. See Kuehn, *supra* note 76, at 10699 (describing the intertwined nature of environmental and social justice).

154. *Id.*

Smart situated its project in a broader social context. It is intended to reach beyond the provision of immediate cooling devices to participating homes and businesses by “grow[ing] and support[ing] local clean energy jobs” and “pioneering a repeatable framework for other communities to try.”<sup>155</sup> By identifying these goals, Alaska Heat Smart gave due consideration to the impacts that its program might have on economic development in Juneau and on similarly situated communities interested in replicating the “Thermalize Juneau” approach.

## B. Alaska Heat Smart and the Characteristics of Successful PPPs

In identifying these goals, Alaska Heat Smart conducted early research—a key characteristic of successful PPPs. As mentioned above, Alaska Heat Smart had the advantage of a similar non-profit that helped guide its path towards creating meaningful relationships between private and public partners to launch a broader-scale heat pump program. Beyond early research, Alaska Heat Smart continues to promote its services and learn from the community how it can be a better partner through local workshops, webinars, and information sessions.<sup>156</sup>

Yet Alaska Heat Smart has struggled, and continues to struggle with the second key characteristic of successful PPPs: accountability. Although Alaska Heat Smart can easily track how many households take advantage of its free home heat pump assessment, at this point, it does not accurately capture how many of those households in fact go through with the purchase and installation of the heat pump. Alaska Heat Smart has rough estimations from the contractors that it has relationships with – yet there is no formal way to track this downstream data. Access to data, and the management of that data, is something that the executive director discussed in an interview with the authors. “It is a challenge – it’s something we need to get better at,” Romanoff said. This lack of data and transparency to the public about the impact of its program undoubtedly hurts the program, including its credibility to the residents of Juneau and potential access to future grants that heavily weigh measurable outcomes.

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155. *Thermalize Juneau: Dec. 8th Kick Off Meeting*, ALASKA HEAT SMART, <https://akheatsmart.org/wp-content/uploads/2020/12/kick-off-slides.pptx-1.pdf> (last visited Sept. 11, 2022).

156. See, e.g., Alaska Heat Smart (@AlaskaHeatSmart), TWITTER (Nov. 30, 2020), <https://twitter.com/AlaskaHeatSmart/status/1333508628834361351> (promoting an upcoming Zoom information session on Dec. 8 to learn about Thermalize Juneau); *id.* (Jan. 20, 2021), <https://twitter.com/AlaskaHeatSmart/status/1352042318975610886> (promoting an upcoming Webinar about Heat Pumps); *id.* (Mar. 15, 2021), <https://twitter.com/AlaskaHeatSmart/status/1371536809667219468> (promoting an upcoming Q&A workshop about the Thermalize Juneau program).

When asked about sharing risk and the contracting process that took place between the partners, Romanoff indicated what is the likely situation of many (if not most) PPPs similar in size to Alaska Heat Smart. In short, the government (the public parties) drove that process and the non-profit (the private partner) simply accepted what the government offered, grateful for the financial support the government provided. That said, when pressed about what risk they share, if at all, in the contractual agreements, Romanoff said it was not really about the contracting process. Most simply: the day-to-day reality of living and working in a city like Juneau means that when you need to get something done, you just do it.

Overall, Alaska Heat Smart is working toward two laudable goals: combatting climate change by increasing the use of cleaner energy sources in residences, and reducing energy costs for individual homeowners and residents of Juneau. Mapped onto the framework outlined by this Article, Alaska Heat Smart appears to promote certain aspects of environmental justice as it seeks to solve an environmental problem. As it grows and expands its services, the partnership may have additional opportunities to further distributive and social justice by, for example, creating a template or guide that could be replicated in other communities thus expanding the program's reach, and by increasing sources of funding so that residents with limited or no reliable income could take advantage of the long-term cost savings that heat pump installation provides (including renters in multi-unit dwellings). Alaska Heat Smart could benefit from an increased focus on the attributes of successful PPPs. First, it could collect and publicize data about the number of heat pumps installed by households that have benefitted from the partnership's free assessment or informational materials, and second, it could ensure an equitable distribution of risk. By taking the lessons of failed PPPs seriously, Alaska Heat Smart can better set itself up for long-term success.

## V. CONCLUSION

Alaska provides ample opportunities to study the impact of climate change and how PPPs might seek to address resulting effects, such as heat waves. This Article has illustrated that while PPPs have great potential to make an impact, simply partnering two or more parties together – at least one from the public sector and at least one from the private sector – is not enough. Instead, successful PPPs require time to conduct market research, meet with stakeholders and the broader community, think through the potential pitfalls, and plan how to best manage risk. Further, successful PPPs have a framework that enables and empowers the partners on both accountability and transparency of that accountability – accountability to

each other and to their relevant communities. Finally, successful PPPs share risk, both investment risk and the revenue impact of risk at compatible and appropriate levels given the context. These key characteristics will guide successful PPPs in Alaska.

Beyond the challenges of setting proper boundaries to the partnership, where PPPs seek to address environmental issues, they can and should factor in the ability of the partnership to further environmental justice interests. In addition to thinking about how the partnership might mitigate the risk of an environmental harm or support individuals' adaptation to a changing climate, the partnership should consider some of the less-obvious aspects of justice. Perhaps the PPP seeks out and incorporates input from affected communities throughout all stages of the process, works to correct a past wrong, or leverages ideas, information, or products to address other social problems in addition to the environmental task at hand. In these ways, PPPs can increase their positive community impact.