Written Testimony
Hearing of the U.S. Senate Energy and Natural Resources Committee
Subcommittee on Water and Power

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Introduction

Good morning. My name is Carlos Riva. I am President and CEO of Poseidon Water, LLC. Poseidon is a leading private developer of water infrastructure projects in North America. My testimony this morning is offered to help members of the Subcommittee better understand the potential for using the model of Public-Private Partnership as an additional option to meet the nation's pressing water infrastructure needs.

My central message today is simple. America faces two harsh realities: an acute need for public infrastructure renewal, and severe fiscal constraints at all levels of government. Under these conditions, the time is right for Congress to take steps to encourage and remove barriers to the wider use of such partnerships. Commonly referred to as P3s, they have become quite common in other developed countries. Uptake of the P3 model in the US, though, has been much slower due to legacy attitudes and a variety of legislative and policy barriers. It is time to overcome these barriers. Properly-constructed P3s, used in the right circumstances, can yield a broad array of benefits to the public. They can help to ensure timely project completion; contain overall project costs; strengthen performance guarantees; reduce risks to ultimate consumers; and avoid the need to take on the burden of additional debt – all while maintaining a strong degree of public control and oversight.

About Poseidon Water

Poseidon, which is headquartered in Boston and majority-owned by a unit of Brookfield Asset Management, was founded in 1995. Our company delivers large-scale, complex water projects to public water agencies using the model of non-recourse, project-based finance. This is a disciplined and capital-efficient model that is now widely used in energy and other infrastructure sectors. It has not yet been widely adopted in the US water sector, where the dominant share of financing for water projects has historically been provided by tax-exempt municipal borrowing. As public sector budgets have been squeezed over time, this reliance on public borrowing has become a major factor in the growing shortfall in infrastructure investment.

Poseidon has also been an early pioneer in using the P3 model to address this gap between infrastructure needs and available public funding in the water supply and wastewater treatment sectors. Our company's experience in P3s dates to the late 1990s when we led the successful

development of one of the first P3s in the US water sector, a wastewater treatment facility modernization and long-term operating agreement serving the city of Cranston, Rhode Island. Recently, in 2015, we successfully completed and brought online the Claude "Bud" Lewis Carlsbad Desalination Plant in Carlsbad, California. Today, that plant, which is the largest desalination facility in the western hemisphere, provides nearly 10% of the water supply of San Diego County. We are also in the final permitting stages for a similar desalination facility in Huntington Beach, California to augment local, drought-resilient water supplies for Orange County. Poseidon is exploring the potential for water reuse and desalination projects, using the P3 model, in several other regions of the US. The need for such solutions, in our view, will only grow in the future as stress on our water supplies continues to intensify. Key factors driving this increased stress include such factors as changing climate patterns and ongoing population growth nationwide, most notably in our country's coastal areas. Many large coastal communities are especially vulnerable to water stress due to such factors as naturally-arid climates, episodic drought and/or seawater intrusion.

Overview of America's Water Infrastructure Needs

Over the past few years, and especially since the 2014 Flint water crisis, there has been growing consensus on the urgent need to renew our nation's deteriorated water infrastructure. Our nation's water systems – including water supply, storage, conveyance and wastewater treatment facilities – are a source of special concern given how critical they are to ensuring public health, environmental protection and economic vitality. Too often, as we've seen, water is simply taken for granted until we suddenly find we have too much or too little. Then, all of a sudden, water overrides every other issue. In this time of partisan division, it is notable that support for infrastructure renewal crosses partisan lines, making it an issue that cries out for political cooperation. Nevertheless, decade after decade, actual investment to maintain, renew and expand these systems has continually fallen short. As a result, the investment backlog required to bring our water systems up to acceptable standards is now commonly measured at several hundred billion to as much as a trillion dollars.[1]

Public Financing vs. Outright Privatization: A False Choice

Discussion of how to move forward on infrastructure renewal often falters over the difficult issue of financing. In an era of constrained public budgets, where can we possibly find the capital resources to meet needs on such a massive scale? The reality, in fact, is that there is abundant private capital available and willing to meet these needs, on very competitive terms given today's comparatively low interest rate environment. However, privately-backed financing of

[1] See, for example, the following reports:
American Society of Civil Engineers (ASCE), "2017 Infrastructure Report Card: A Comprehensive Assessment of America' Infrastructure" (March 2017)
Deloitte University Press, "The Aging Water Infrastructure: Out of Sight, Out of Mind?" (March 2016)
American Water Works Association, "Buried No Longer: Confronting America's Water Infrastructure Challenge" (February 2012)

water infrastructure – now used quite commonly in other countries – has simply not been the norm in the US.

What is the reason for this disconnect? All too often, the issue is presented in terms of a choice between massive and unaffordable public spending or borrowing on the one hand, and outright privatization and loss of control over critical public resources and services on the other. I believe this is a false choice. Frankly, a well-crafted public-private partnership is very different from privatization; it is more accurate to describe it as an alternative method of project delivery. A well-designed P3 ensures close public oversight, and brings public and private sector actors together into a disciplined, cooperative long-term relationship that leverages the skills and strengths of each.

I would offer the model of our Carlsbad facility, and our relationship with the San Diego County Water Authority, as an example of how a well-designed P3 agreement can promote cooperation and mutual benefit. Poseidon underwrote the cost of developing this facility at no risk to San Diego consumers and oversaw its completion on-time and on-budget. We have committed to operate the Carlsbad facility on a strict pay-for-performance basis for the duration of a 30-year concession period. The Authority has contractual rights to buy out the contract at intervals throughout this term and, at the end of the term, to purchase the facility in sound working order for one dollar. A member of the County Water Authority's staff works inside our facility on a daily basis, ensuring full visibility into operations. We are pleased to have forged an excellent and highly communicative, day-to-day relationship with the Authority. It is a true partnership, and we are especially gratified that this landmark desalination facility, by augmenting local supply and easing pressure on the County's other water sources, has earned such strong public support within the larger community of San Diego County.

Global and US Experience in P3s

Let me now turn to the broader potential for using the P3 model to address broader needs in the water sector. The US has been far from alone in facing challenges in infrastructure financing. As far back as the 1970s and 1980s, a worldwide infrastructure investment backlog began to develop due to the sharp economic dislocations that occurred at that time. Due to the combination of economic and population growth along with the aging of legacy facilities, many countries have been challenged throughout this period to modernize and expand their transportation, energy, telecommunications, railway, water and other infrastructure systems. The United Kingdom was the first country to adopt the P3 model in earnest beginning in the early 1990s. Use of this approach spread to other countries including Canada, Australia New Zealand. These countries now commonly use the P3 model to deliver infrastructure projects without triggering the need for public sector borrowing, and the model is also gaining acceptance in continental Europe, Asia and Latin America.[2] More recently, within the past decade many US states have begun to adopt this model for highway project construction. Today, some 35 states have statutes that enable the use of various P3 structures, principally for transportation projects.[3]

[2] See, for example, EY Report, "Public-private partnerships and the global infrastructure challenge: How PPPs can help governments close the 'gap' amid financial limitations (2015).
[3] See https://www.fhwa.dot.gov/ipd/p3/legislation/

All of these earlier experiences in other countries and states here in the US have yielded valuable lessons to guide the federal government on the uses and limitations of P3s. Let me outline some of the key criteria for determining whether and where this project delivery model may provide a good fit in the water supply space.

Definition and Requirements for Success

To begin with, there is no single agreed definition or structure for a P3. In fact, a common feature of the most successful P3s is that they are carefully tailored to the circumstances and needs of a specific project. Appended to my testimony are excerpts from a brief and useful fact sheet produced by the National Council for Public-Private Partnerships[4]. It defines a P3 as follows:

> "a contractual arrangement between a public agency (federal, state or local) and a private sector entity. Through this agreement, the skills and assets of each sector (public and private) are shared in delivering a service or facility for the use of the general public. In addition to the sharing of resources, each party shares in the risks and rewards potential in the delivery of the service and/or facility."

As outlined by NCPPP, a number of preconditions are considered key to ensure the success of a P3. These include: a strong public sector champion; a solid statutory environment; a dedicated public sector team focused on P3s projects or programs; a detailed contract; a clearly-defined revenue stream; broad stakeholder support; and well-chosen partners.

From Poseidon's own experience, I can attest how important each of these elements is to the success of a public-private partnership. The P3 model is by no means applicable for all or even most types of infrastructure projects. In truth, most water infrastructure projects are modest in size and employ commonly-accepted technology. Generally speaking, standard models of procurement are perfectly appropriate for such projects; it is simply not worth the up-front time and costs to negotiate complex agreements and risk allocations for projects that are relatively low-risk, simple and straightforward.

However, as projects become larger in scale and cost, or if they use newer, unfamiliar or as-yet non-standard technologies, they can bring additional risks that can be difficult to anticipate. In these circumstances, there is real value to be realized by rigorously identifying and quantifying such risks, and undertaking a detailed contracting process that assigns risks to expert project partners who are in the best possible position to manage, retire or mitigate them. A P3 for a large water supply project using new technology for desalination or the potable reuse of wastewater, for example, would require an extensive teaming arrangement with a broad array of partners. As the lead developer for such a project, Poseidon has been responsible for working with public water agency clients to assemble world-class, expert teams and negotiate very complex P3 arrangements. Such contractual arrangements typically include world-class design firms, engineering, procurement and contracting (EPC) firms, and operations and maintenance

[4]Source: http://www.ncppp.org/ppp-basics/7-keys/

(O&M) contractors that have day-to-day involvement in water infrastructure development and current knowledge of cutting-edge trends in technology. In the case of non-recourse project finance, the key to achieving financial closure on competitive terms lies in the ability to attract sophisticated debt and equity capital sources by demonstrating how all relevant project risks have been identified and managed. The rigor, discipline and transparency of this process helps to ensure that only the most viable projects win financing. This approach helps to protect consumers – as both taxpayers and utility ratepayers – from the consequences of imprudent decisions. These process attributes increase the likelihood that those projects that do move forward are completed on-time and on-budget, and perform to specification over their contract term.

Removing Obstacles to the Wider Use of P3s

In the United States, the reality is that the great majority of water infrastructure projects are funded, not at the federal level, but at the state or local level. However, many local projects rely to a greater or lesser extent on federal funding, for example, through access to the EPA's State Revolving Fund (SRF) program. As members of the Subcommittee contemplate infrastructure and tax reform legislation over the remainder of this session, it is my strong hope that you will consider adopting rules and policies that encourage and incentivize state and local jurisdictions to make wider use of this P3 model.

The federal government also provides direct funding for water projects, for example, through the Department of Interior's Bureau of Reclamation and the Army Corps of Engineers. It is public knowledge that these agencies have publicly expressed interest in using the P3 model, but find themselves constrained from doing so by existing federal budgeting rules. To ease these constraints, let me mention a few specific steps the Congress could take to encourage or remove barriers to the wider use of P3s:

- Reforms to the annual federal budgeting process. Under federal law including the Anti-Deficiency Act, federal agencies may not make multi-year, forward commitments to provide for repayment over time of investments in infrastructure projects. As a result, infrastructure investments funded on the basis of year-to-year, annual appropriations. In cases where appropriations are reduced or eliminated, construction is pared back or stopped, with disruptive effects on project schedules and long-term costs. To address this problem, Congress should reexamine its budgetary rules and allow interpretations that would enable federal agencies to contemplate longer-term, future-year payment streams in their annual budget submissions. While existing law prevents agencies from making binding long-term commitments to future-year outlays (other than short-term concession contracts), they might be expressly permitted to make commitments that, in calculating future-year budget requests to Congress, will include repayment streams associated with a P3 contract agreement.

- Lifting the cap on Private Activity Bonds or PABs. As I mentioned earlier in my testimony, there is an artificial difference in the cost of a project undertaken by a private entity like Poseidon rather than a public agency, simply because public agencies have traditionally enjoyed access to tax-exempt financing whereas interest on private lending instruments used

by P3s is typically taxable. Privately-financed infrastructure projects may qualify, to a limited extent, for tax-exempt private activity bonds (PABs), tax-exempt bonds issued by or on behalf of local or state governments for the purpose of providing special financing benefits for qualified, privately-developed projects. However, the quantity of PABs available in the financing marketplace is subject to caps on a state-by-state basis. We are aware that legislation has been introduced in the House of Representatives (H.R. 3009) to raise the caps that limit the availability of these PABs. To stimulate additional lending for the public infrastructure sector and close the gap in infrastructure investment that is the focus of today's hearing, I would strongly encourage Congress to enact this legislation, whether as a stand-alone action or as part of any comprehensive legislative infrastructure package developed during this session.

- Enact Reclamation RIFIA: We urge the Congress to expand the Bureau of Reclamation's financing authority and attract investment in water infrastructure P3s by authorizing the proposed Water Infrastructure Finance and Innovation Act, or WIFIA, for Reclamation (The New WATER Act – H.R. 434). This bill would expand Reclamation's flexibility to support infrastructure development in the 17-state western region where water stress and drought resilience are especially acute issues. This proposed program is largely modeled on the proven and successful TIFIA program under the jurisdiction of the Department of Transportation, and recently-enacted and funded WIFIA program at the Environmental Protection Agency. The Congressional Budget Office has found that WIFIA's expanded loans and loan guarantees and support for joint private sector participation in planning with local and state water management agencies represents a highly cost-effective way to increase needed investment in water infrastructure. In fact, a small outlay of $6-$10 million on the back end (to cover the low default rate associated with public water projects) equates to over $11 billion in loans under a WIFIA-like program for Reclamation – and resulting in over $22 billion in new water infrastructure. These low interest/long term loans can help bring costs down and help P3s to thrive in the water space.

- Legacy attitudes. Finally, the shortfall in investment in infrastructure arises in large measure very simply from longstanding habit and practice. There remains an enduring presumption that these needs must be funded with public dollars, simply because provision of water supply and treatment services is a matter of public interest. This presumption has long since been overcome in any number of other capital-intensive infrastructure sectors. Private developers of America's energy, railway, airport and, increasingly, highway infrastructure routinely attract tens of billions of dollars in private capital annually to meet evolving needs.

Conclusion

In closing, I would like to thank the Subcommittee again for the invitation to appear today and applaud your decision to convene this timely hearing. The issue of water infrastructure renewal is critical to our country's future in many ways. It is certainly true that the investment requirements to meet these needs appear daunting, while public financing resources are scarce and under great pressure in today's political climate. Nevertheless, for projects that fit the necessary criteria, there is abundant private capital available to help meet this important public

need. The vehicle of public-private partnership provides an effective way to tap into private capital resources to support infrastructure development, while assuring strong public involvement, participation and oversight. Our company's experience convinces me that this approach represents a timely and effective tool to help close the infrastructure funding gap, and to meet the very real water challenges in our country's future.

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Appendix 1

Biographical Statement
Carlos Riva
Chief Executive Officer, Poseidon Water LLC

Carlos Riva joined Poseidon as the Chief Executive Officer in 2011. Mr. Riva has over 25 years of experience in infrastructure project development and finance. He has extensive knowledge in growing new companies and leading technologically sophisticated businesses in the fields of renewable energy, electric power generation, biotechnology, engineering, and construction.

Prior to joining Poseidon, Mr. Riva was the President and Chief Executive Officer of Verenium Corporation, an industrial biotechnology company dedicated to commercializing next generation biofuels and specialty enzymes. Previously, he was Chief Executive of Amec Group, Ltd. a major British engineering and construction firm. Mr. Riva has also had extensive experience in the electric power industry, having served as the founding Chief Executive of Intergen and as President of J. Makowski Company, developer of the first independent power project in the United States. In these roles, he oversaw the development of over 17,000 megawatts of greenfield electric power generation projects worldwide.

Mr. Riva holds B.S. in Civil Engineering from Massachusetts Institute of Technology, an M.S. in Civil Engineering from Stanford University and an MBA from Harvard Business School.

Appendix 2
Public-Private Partnerships Defined and Described

Public-Private Partnerships Defined

A public-private partnership (P3) is a contractual arrangement between a public agency (federal, state or local) and a private sector entity. Through this agreement, the skills and assets of each sector (public and private) are shared in delivering a service or facility for the use of the general public. In addition to the sharing of resources, each party shares in the risks and rewards potential in the delivery of the service and/or facility.

7 Keys to Successful P3s

The following are to be considered "best practices" in the development of public-private partnerships (P3s). It is recognized that the methodology for implementation of P3s can vary, depending on the nature of a given project and local concerns. Given this, it is the position of the NCPPP that these are "best practices":

1) PUBLIC SECTOR CHAMPION:
Recognized public figures should serve as the spokespersons and advocates for the project and the use of a P3. Well-informed champions can play a critical role in minimizing misperceptions about the value to the public of an effectively developed P3.

2) STATUTORY ENVIRONMENT:
There should be a statutory foundation for the implementation of each partnership. Transparency and a competitive proposal process should be delineated in this statute. However, unsolicited proposals can be a positive catalyst for initiating creative, innovative approaches to addressing specific public sector needs.

3) PUBLIC SECTOR'S ORGANIZED STRUCTURE:
The public sector should have a dedicated team for P3 projects or programs. This unit should be involved from conceptualization to negotiation, through final monitoring of the execution of the partnership. This unit should develop Requests For Proposals (RFPs) that include performance goals, not design specifications. Consideration of proposals should be based on best value, not lowest prices. Thorough, inclusive value for money (VFM) calculations provide a powerful tool for evaluating overall economic value.

4) DETAILED CONTRACT (BUSINESS PLAN):
A P3 is a contractual relationship between the public and private sectors for the execution of a project or service. This contract should include a detailed description of the responsibilities, risks and benefits of both the public and private partners. Such an agreement will increase the probability of success of the partnership. Realizing that all contingencies cannot be foreseen, a good contract will include a clearly defined method of dispute resolution.

5) CLEARLY DEFINED REVENUE STREAM:
While the private partner may provide a portion or all of the funding for capital improvements, there must be an identifiable revenue stream sufficient to retire this investment and provide an

acceptable rate of return over the term of the partnership. The income stream can be generated by a variety and combination of sources (fees, tolls, availability payments, shadow tolls, tax increment financing, commercial use of underutilized assets or a wide range of additional options), but must be reasonably assured for the length of the partnership's investment period.

6) STAKEHOLDER SUPPORT:
More people will be affected by a partnership than just the public officials and the private sector partner. Affected employees, the portions of the public receiving the service, the press, appropriate labor unions and relevant interest groups will all have opinions, and may have misconceptions about a partnership and its value to all the public. It is important to communicate openly and candidly with these stakeholders to minimize potential resistance to establishing a partnership.

7) PICK YOUR PARTNER CAREFULLY:
The "best value" (not always lowest price) in a partnership is critical in maintaining the long-term relationship that is central to a successful partnership. A candidate's experience in the specific area of partnerships being considered is an important factor in identifying the right partner. Equally, the financial capacity of the private partner should be considered in the final selection process.

Source: "7 Keys to Success," Fact sheet by National Council for Public-Private Partnerships (NCPPP), http://www.ncppp.org/ppp-basics/7-keys/