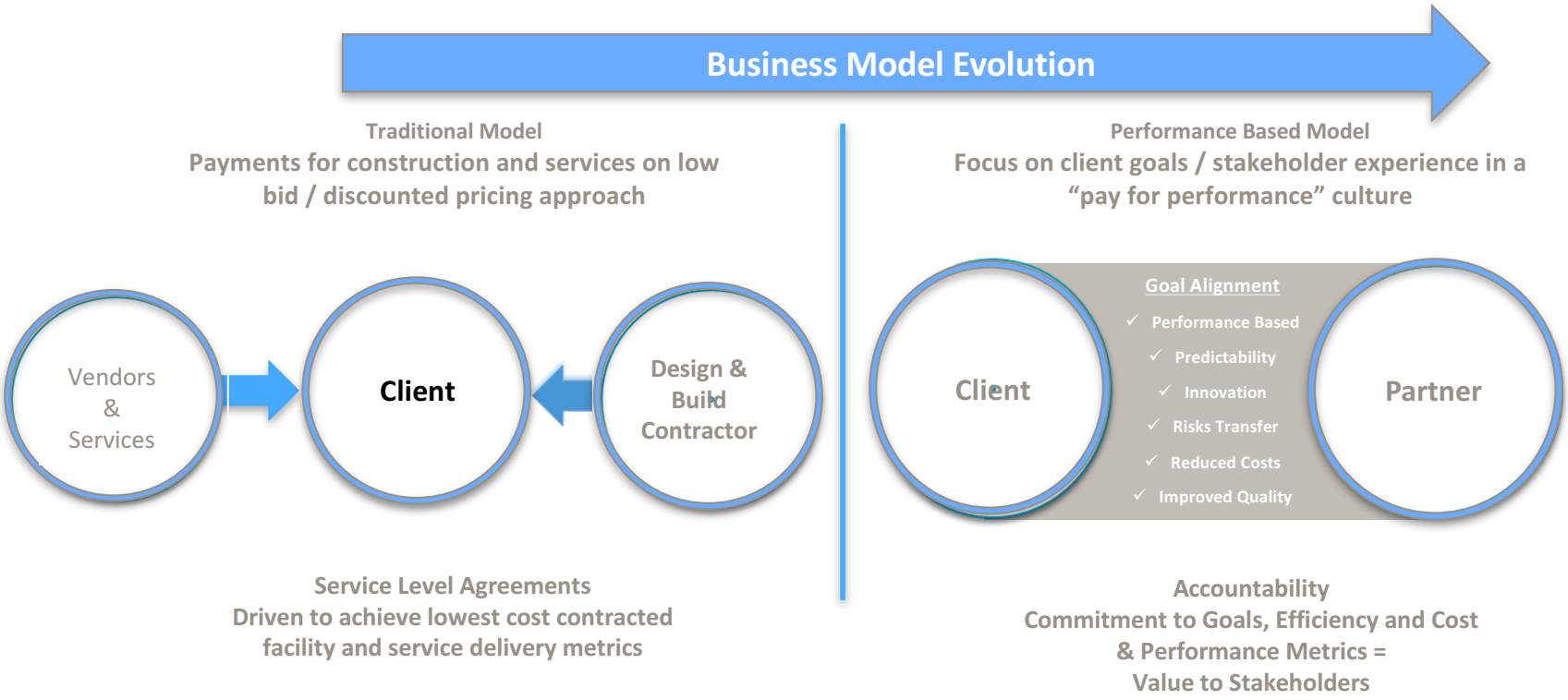
The Performance Based Building Coalition

PPP Discussion: State of NM
Dec 1, 2017

What is a P3?

Business Models Are Evolving

Funding pressures drove short term infrastructure decisions; New business models and strategies are looking at longer term perspective



What is a Public-Private Partnership?

It goes by many names: PPP, P3, PBI, PFI, PGF but essentially it is a long term contractual relationship where;

- Single private entity ("Project Company") accepts responsibility to design, build, finance, maintain and in some cases operate infrastructure (greenfield or renovations and expansions)
- Responsibility for specified facilities management over a long term concession period (30+years) with pre-defined hand back conditions at contract expiry
- A public entity ("Sponsor") contracts with a project company who in turn contracts with consortium partners
- Performance based contracting arrangements
  - Payment from Sponsor only begins upon completion of construction
  - On-going payments are subject to deduction for failures in service delivery
  - Essentially, a payment for performance of a service
  - ADD IN SOMETHING ABOUT MILESTONE PAYMENTS (TBD)
- Firm price for term of the concession

P3 – At a Higher Level, Two Models

Toll / Revenue Model

Net Revenue Generating Assets

- New revenue generating facilities
- Existing tolled facilities

Other Options based on client need

Availability Payment / Performance Model

Subsidized Assets

- Non Tolled Transit
- Non tolled facilities

P3 Toll or Revenue concession can:

- Raise funds for new projects
- Build new “greenfield” projects
- Expand capacity
- “Build it and they will come”

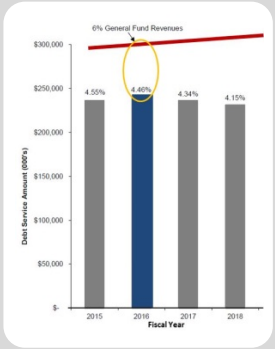
P3 availability structure can:

- Transfer execution & performance risk
- Reduce costs
- Increase certainty
- Accelerate funding / project completion

Why P3s?

Responsible Fiscal Management

Debt Capacity
monitoring and financial flexibility are critical components of the City's fiscal management practices



Holds the Developer Accountable
for performance over the life of the asset

Creates Competition
on the basis of both fiscal and facility performance over the life of the asset, not just first cost

Manages Risk
related to implementation and management of the project; no political embarrassments

Adopting a Modern Approach

Addresses future obligations
for capital maintenance

Incorporates a "cost of ownership" financial plan
by taking a lifecycle cost approach

Incentivizes Innovation
by creating a competitive procurement and performance-based payment structure with a private development partner.

Transfers responsibility of cost overruns and schedule delays
to a party with at-risk capital and contractual obligations

Objectives of a Performance-Based PPP

- ***Accelerated delivery*** of new and rehabilitated facilities
- ***Better control*** of facility costs, schedule and maintenance
- ***Predictable funding requirements*** for infrastructure and services
- ***An integrated whole-life solution*** to construction and maintenance, with handback criteria pre-determined and guaranteed
- ***Transferring risk*** to the private sector; alignment of interests
- ***Frees up funds*** to finance improvements for other buildings
- ***Selectivity*** – PPP is only pursued if it yields greater benefits than traditional procurement

A 'Whole of Life' solution means nothing for Government, unless they have a long term partner to deliver what's promised

Guaranteed handback condition is in effect a 30 year warranty

Sample Projects

Traditional Procurement

Project	Location	Sector	Final Cost ($000,000's)	% Over	Months Late
VA	Las Vegas	Social	$ 585	80%	86
VA	Orlando	Social	$ 616	143%	61
VA	Denver	Social	$ 1,730	427%	50
VA	New Orleans	Social	$ 1,035	66%	14
UC	San Diego	Social	$ 943	42%	Unknown
Big Dig	Boston	Transport	$ 15,000	150%	Double plan
520 Bridge	Seattle	Transport	$ 4,250	10%	>18
Highway 99, Bertha	Seattle	Transport	TBD	TBD	> 27

P3 Procurement

Project	Location	Sector	Final Cost ($000,000's)	% Over	Months Late
Humber Hospital	Toronto	Social	$ 1,750	0%	0
CSEC	Ottawa	Social	$ 867	0%	0
Long Beach Courts	Long Beach CA	Social	$ 339	0%	0
Alberta Schools (2 Projecects)	Alberta	Social	$ 887	0%	0
Durham Courts	Ontario	Social	$ 355	0%	0
MGCS Data Center	Ontario	Social	$ 352	0%	0
Toronto Detention Center	Toronto	Social	$ 764	0%	0
Windsor Parkay	Ontario	Transport	$ 1,786	0%	1
Miami Tunnel	Miami FL	Transport	$68 M / Year	0%	2

Risk Comparison

Risk Element	Traditional	Lease	P3
Procurement			
Design & Construction			
Finance			
Land/Building Ownership			
Operating Term			
Rights Retention			
Cost of Operations			
Operating Performance*			
Availability/Abatement			
Life Cycle Replacement			
Condition at end of Term			
Energy Consumption Costs			

*Plan set during procurement, prior to commitment to proceed

Sponsor | Shared | Private Partner

Review: What is a PPP?

Public-Private Partnerships are a method of achieving efficient allocation of risk and reward between the public and private sectors to deliver and finance a service or facility for the benefit of citizens.

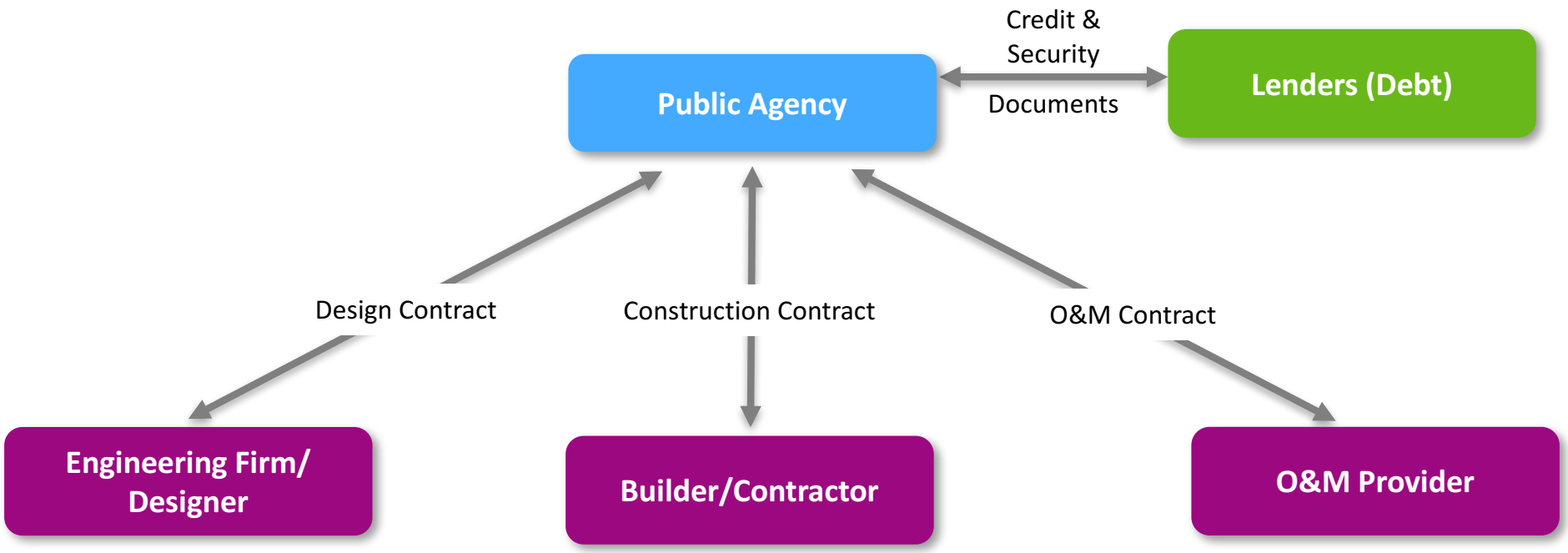
- Public agency procures a private partner to design, construct, finance, operate and maintain new or existing infrastructure
- PPPs can be structured to meet public agency objectives:
- Public agency retains asset ownership and control, through specification of minimum performance requirements and standards
- Agreement will provide for termination at significant financial loss to the private partner if these standards are not met

Examples of Infrastructure delivered as PPPs:

- Municipal Facilities
- Schools
- Prisons
- Transit
- Railroads
- Water, wastewater, power
- Highways/Bridges/Tunnels
- Universities and student accommodation
- Public housing
- Healthcare
- Sports facilities

Contract Structures

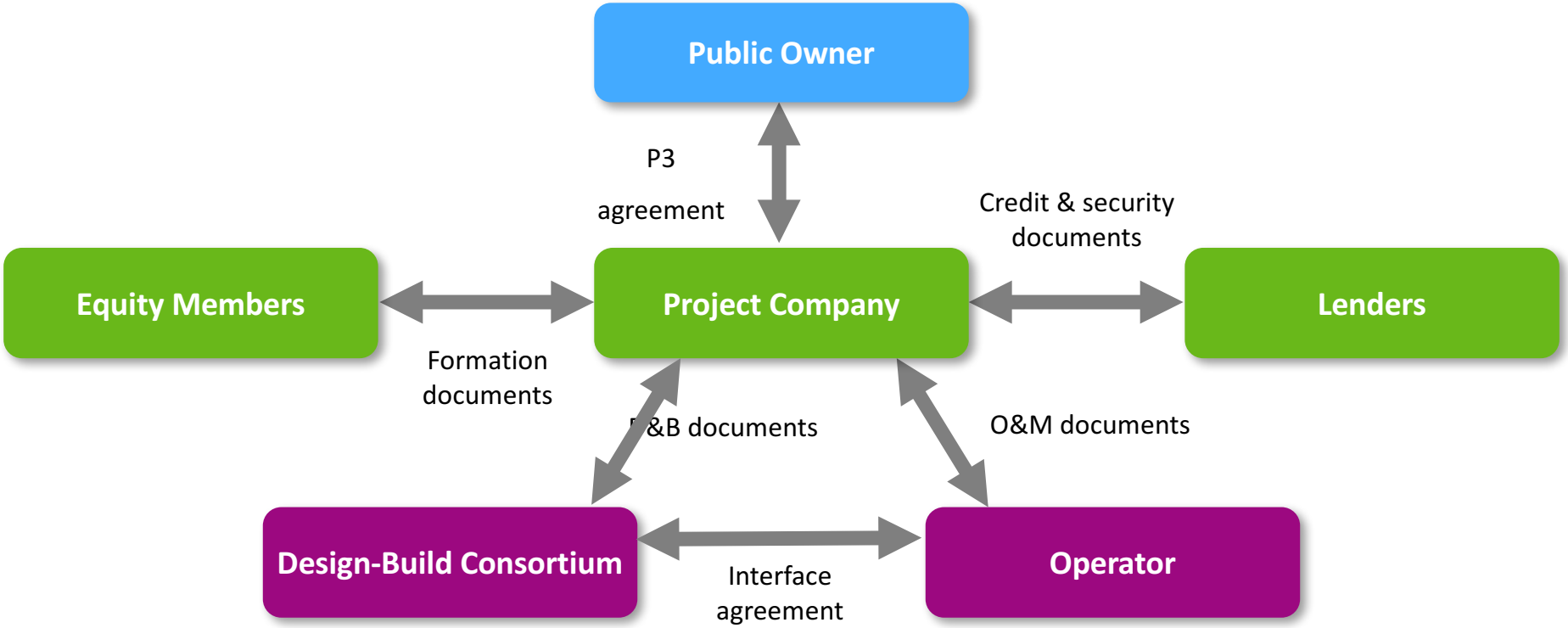
Traditional Comparator (for reference) Design-Bid-Build/Design-Build Model Structure With Public Finance



1. Process is segmented: parties are less able to realize innovation or efficiencies.
2. Public Sector manages each segment of the process independently.
3. Public Sector assumes budget and schedule risk throughout.
4. No private sector incentive for long-term asset quality or timely delivery.

Basic P3 Model Structure

A typical PPP is structured as a long-term agreement / concession in which the public sector assigns to a private sector company the right to design, build, finance, maintain and/or operate the infrastructure asset for a defined period of time and per an agreed upon financial arrangement.



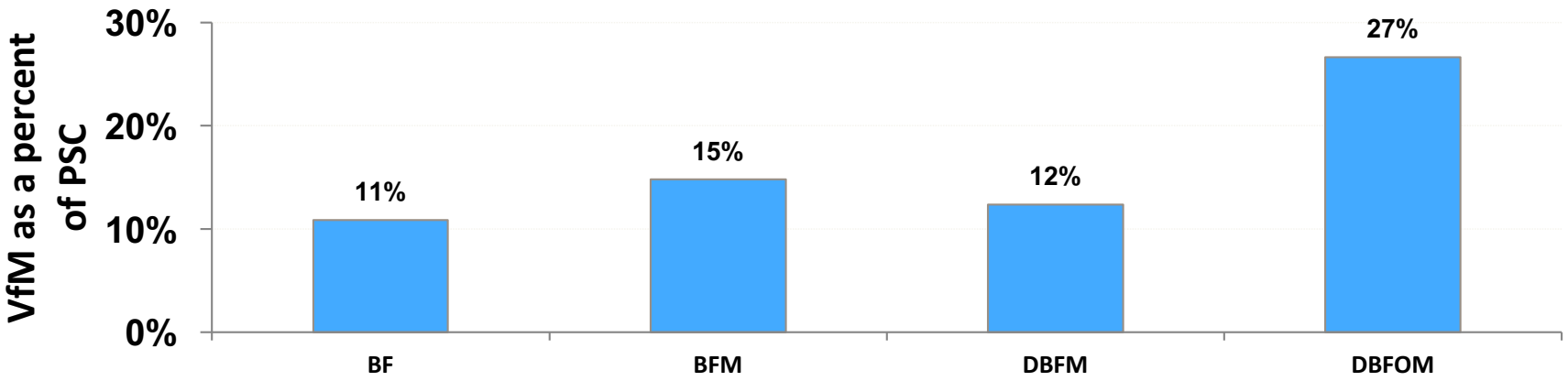
1. One contract awarded to a private design, construction, O&M consortium to operate for a specified time
2. P3 consortium is motivated to provide the best value, whole-life solution
3. Private sector assumes more risk in both the short and long term
4. Greater incentive and reward for private sector innovation and efficiencies
5. Often higher cost of finance (mitigated if access to PABs and TIFIA)

Quantifying the Benefits of P3

- In Canada, analysis indicates DBFOM delivery generates the most value for money ("VfM") per dollar of public sector comparator ("PSC")

P3 Value for Money (VfM) versus Traditional Delivery in Canada

- VfM as a percent of PSC for 93 Canadian P3 projects (66 specific to either healthcare or justice sectors)
- As demonstrated below, VfM was highest under the P3 when compared to other delivery models



Why private financing?

Value for Money

- Long-term contracts (25+ years) capture the asset's lifecycle costs. The use of private finance also incentivizes greater innovation which also reduces costs.

Performance is incentivized

- Private finance = skin in game. Payment is contingent on performance: on-time and on-budget delivery and long term performance of the asset.

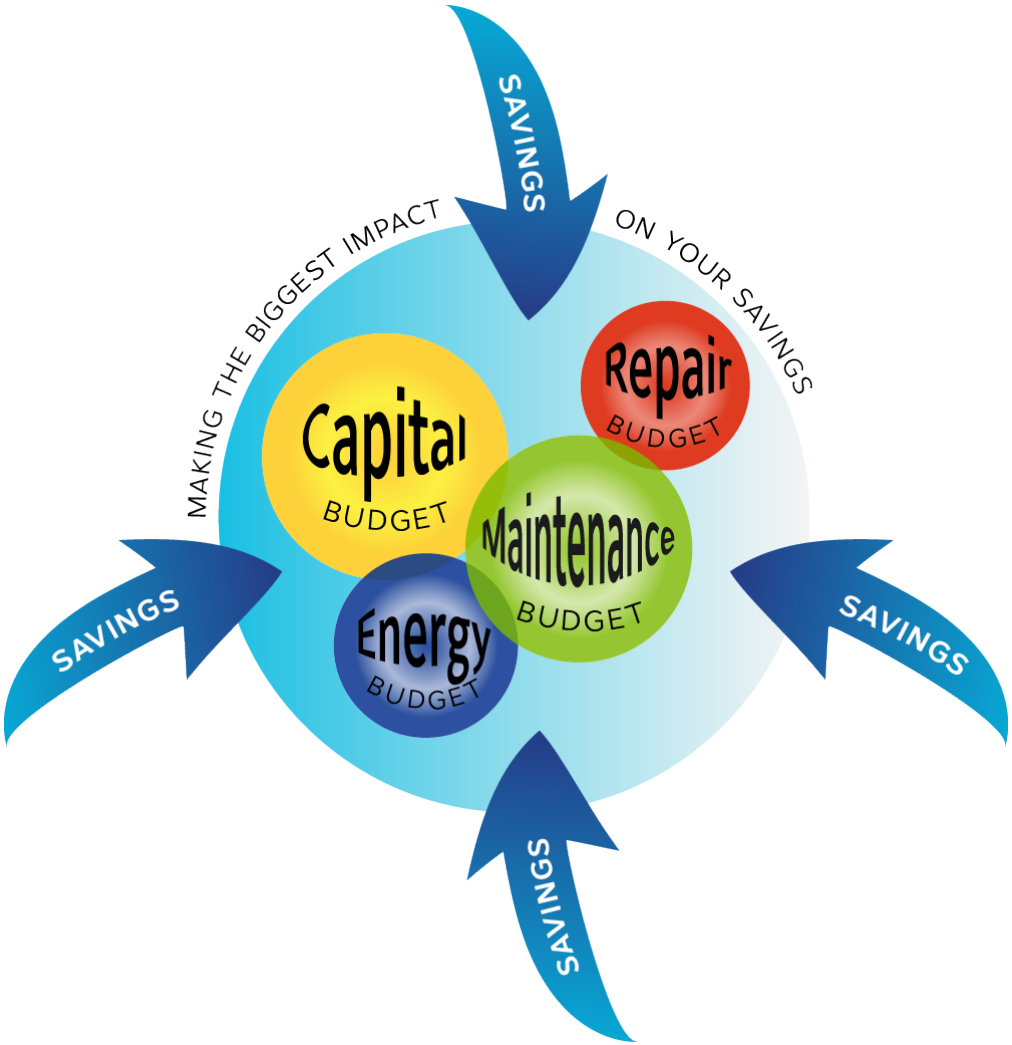
Cash Flow Management

- Private financing reduces demands on the public's bonding capacity, freeing up government funds for other vitally needed public services.
- Public payments often begin when construction is complete, reducing upfront financing costs and incentivizing an accelerated completion schedule.

Risk Transfer

- A P3 (design-build-finance-operate-maintain) structure, not the public sector, absorbs the risks of short- and long-term cost overruns. Guarantees quality of maintenance.
- Highly complex projects especially benefit from this approach (such as the Port of Miami Tunnel in Florida and the Goethals Bridge Replacement in New York).

The Value Proposition



- "Whole of Life" costs instead of first cost focus
- Decisions during design consider Value for Money and best investment approach
- Result in lower Whole of Life facility cost (the "box" is smaller)
- Outcomes are guaranteed
- Payment Mechanism is vehicle for Sponsor to enforce guarantees

Independent “White Paper”

Our infrastructure is doomed fr the start

BY JOHN BROWN MILLER, OPINION CONTRIBUTOR — 11/20/17 10:00 AM EST
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The “design-bid-build” project model is one of several proven methods for delivering infrastructure. It’s been the model of choice since 1916, when Congress began funding the U.S. highway network with this method.

A design professional is first selected based on qualifications, not price. After “design” is complete, that design is put out to open competitive “bid.” The lowest priced bidder then “build(s).”

In 1956, this method was used to deliver the $40 billion Eisenhower Interstate Highway network. In the 1970’s, EPA used it to distribute $70 billion to 3,000 local governments for wastewater treatment plants. Design-bid-build is policy dogma — a century after its first use.

Design-bid-build addressed two practical issues. The first was how to ensure high quality engineering design. Less than 10 percent of initial delivery costs are spent on design, but poor design puts the public at risk and can lead to substantial construction delays and cost overruns. Selecting the designer on the basis of qualifications is one way to ensure good design.

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The theory is simple: A dime well spent on high quality design improves the likelihood of spending the next taxpayer dollar wisely on construction.

The second issue was how to not to overspend that next dollar on construction. Open competition, only on price, is how this project model seeks the lowest construction cost.

While cash flow varies by project, the shape of a typical cash flow curve on a design-bid-build project is stable. For each $10 expense on design, there is (at least) a $100 expense on construction, over an initial delivery period of eight years. This cash flow reveals the project model's primary weakness. Infrastructure assets have useful service lives of more than 35 years. This project model ignores the operations, maintenance, and repair period. These activities must be affordable and must be performed by the governments holding the asset.

A typical cash flow for this project model, including ongoing costs, spans 40 years. Ongoing costs are more than 10 times that of initial design and construction. More than $1000 is spent during a typical facility's useful life for every $10 spent on design and $100 spent on construction. These costs include utilities, regular maintenance (with no deferral), and a substantial capital repair/refit mid-way through its life. Facilities that are properly operated, maintained and repaired, are always in good condition. While cash flow varies by project, the shape of the curve is stable.

Our research at MIT confirmed that life cycle costs of operation are 10 to 20 times that of initial construction. For long-life facilities like the Brooklyn and Golden Gate Bridges, ongoing maintenance costs 20 times more than construction.

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The critical assumption of the design-bid-build model — timely performance of ongoing operation, maintenance and repair — is no longer valid. Competing claims for scarce public funds have emerged. The massive tail of ongoing costs is not affordable. Funding for these ongoing costs has fallen. Without it, this project model can't work. Report cards by the American Society of Civil Engineers confirm this failure.

A century of experience confirms it is time to question the effect of federal grants on state and local infrastructure. In exchange for a federal highway grant reimbursing 90 percent of the $110 cost of initial design and construction ($99), the state pays 10 percent ($11) at the time the road is built, plus maintenance and repair costs of more than $1,100 over the next 35 years.

The future cost is 100 times the sate's $11 initial expense. An iceberg hides 90 percent of its weight underwater. This challenge is 10 times worse – 99 percent of future life cycle costs are hidden – for other officials and taxpayers to handle.

This is the source of our current difficulties.

Many years after initial delivery, many public owners have moved away from this iceberg. The future expense is unaffordable. Regular maintenance and capital repairs are deferred. Facilities decay from

neglect, driving replacement costs up. Users endure prolonged periods of poor condition and poor levels of service. Just before failure, with the facility in crisis, "replacement" through a design-bid-build project is the political solution. This explains the unending call for more federal grants for new design-bid-build projects – the only tool in the toolbox.

The consequences are plain: chronically poor levels of service, higher travel times, and higher transportation costs, over failing infrastructure networks. Users are justifiably upset. Core infrastructure networks are plainly in disrepair – with no fix in sight. The skills of the building trades are sidelined, as bridges rot and pipes leak. A century of dogma keeps all of us from higher levels of service at lower life cycle costs. And, poor infrastructure performance makes every American less competitive in world markets.

Simple, proven solutions exist. Procurement systems in Britain, Canada and Australia have been opened to include all proven delivery methods, as they did in the United States before 1916.

It is time to use proven competitive methods to manage life cycle costs. Opening competitive procurement will produce far better results – in savings and new investment – than any proposal in Congress to spend more money on design-bid-build projects.

Our infrastructure needs have changed since 1916 — our infrastructure project model should too.

John Brown Miller, Ph.D., was previously a professor of civil engineering at MIT, chairman of the American Bar Association Section of Public Contract Law and is an expert on infrastructure procurement. This is the first part of a three-part series on infrastructure.

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THE HILL

We can lower infrastructure pr tag if bids focus on long-term c

BY JOHN BROWN MILLER, OPINION CONTRIBUTOR — 11/22/17 10:00 AM EST
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© Greg Nash

As American infrastructure continues to decline, the endless debate whether “public” or “private” infrastructure is “cheaper” is much more amusing than substantive. The participants in this debate keep talking past each other. Our MIT research explored how project delivery and finance methods affect levels of service and life cycle cash flow.

The shape of a typical cash flow for initial design and construction of an infrastructure project is stable. For every $10 government spends on design, it spends more than $100 on initial construction. The initial delivery time frame for a typical design-bid-build project is eight years. But, the cost of a typical infrastructure facility extends far beyond eight years.

In-service costs over a facility’s 35-year life, with a typical refit/repair mid-way through that life, are more than 10 times the cost of design and construction. For every $110 government spends on design construction, it spends more than $1,100 on operation, maintenance and repair. On a life cycle basis, a commitment of $10 to fund the design of an infrastructure facility typically leads to further commitments of more than $100 to construct it and more than $1,100 to operate, maintain and repair it over its useful life, including a refit/repair mid-way through that life.

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Typical cash flows for a publicly funded concession have the same shape, over 35 years. When contracting on a concession basis, public owners include a substantial refit of the asset and a contractually required maintenance and repair effort just before turnover to the government. Concession contracts make payment contingent on full performance of government requirements as to levels of service and asset condition.

But, there are substantial differences between the cash flows for a concession contract that combines design, construction and long-term costs into a single contract obligation. The cost of design and construction is typically reduced by about 10 percent when these activities are integrated in a single effort — known as “design build.”

Instead of spending $110, typical concession costs are $99 for design and construction, a 10 percent reduction. Our research also showed that the cost of maintenance and repair is substantially reduced when design-build is further integrated across the life cycle. Savings of 25 percent on operation, maintenance and repair costs are typical.

Typical cash flows for a privately funded concession contract to design, build, finance, operate and maintain an infrastructure facility has the same shape, except with a 3 percent financing premium across the concession.

So when we think about the realities of paying for infrastructure, it is easy to forget that although a project may appear to cost $110 to design and build, it will cost upward of $1,200 when operation, maintenance and repair are factored in.

Taxpayers are footing the bill, no matter how government delivers infrastructure.

Under the design-bid-build project structure the U.S. has relied on, head to head competition gets the lowest construction price. But, the “lowest price” is obtained for the one specific design produced by the design team. This distinction is important. There may be other designs that would have produced a lower construction cost. These remain unknown and unpriced. There is no competition in design-bid-build to produce the design with the “lowest price.”

The design-bid-build process doesn’t require the designer or contractor to make binding commitments about operation, maintenance and repair costs in a “public” competition. Minimizing these costs are not among their contractual responsibilities.

There are clear benefits to injecting competition into our infrastructure projects. When teams compete over the life cycle of a project, competitors are planning far forward, not only to the construction phase, but to the long operation, maintenance and repair phase. Winning designs are scrubbed for cost to build, repair and maintain. Designs are configured for ease of construction, repair and maintenance. Commitments are in place to perform those services as budgeted. The entire life cycle is wrapped up in a competitive package, under the pressure of competition.

More than two hundred years of experience in the United States shows that there are multiple ways to deliver and finance infrastructure, and do it well. And we know how to compete to include operation, maintenance and repair costs in competitions for infrastructure.

A good U.S. example is Seattle's Tolt River Water Treatment Project. The city first built its best estimate of life cycle cash flow, assuming "public" delivery. The city then announced that it would accept "concession" delivery proposals — but only if they produced a life cycle cost savings of at least 15 percent. The winning proposals reduced the city's life cycle cost by nearly 40 percent. Competition works.

The argument whether "public" or "private" delivery is "best" is irrelevant. Best value is the goal: the most advantageous life cycle combination of level of service and price. Competitive models allow governments to get a definitive answer for each and every significant infrastructure project.

Use competition. Prove it — to taxpayers.

John Brown Miller, Ph.D., was previously a professor of civil engineering at MIT, chairman of the American Bar Association Section of Public Contract Law and is an expert on infrastructure procurement. This is the second part of a three-part series on infrastructure. Explore the rest of the series:"Our infrastructure is doomed from the start," and "Federal funds might delay state infrastructure problems, but they'll never solve them."

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