



AXIS INSIGHTS

Complexity or Convexity?

How early decisions in major infrastructure can compound, for better or worse

PART I

Following our first Axis Insights piece, several people asked what fragmentation actually looks like in practice. It is a fair question. Fragmentation is easy enough to describe at a high level, but its consequences become much clearer when you follow a decision through the life of an initiative.

Hospital capital planning provides a useful example of how this can play out in practice. The circumstances described below are a composite drawn from first-hand experience across major hospital capital initiatives and government decision processes over many years and through multiple governments. Identifying details and figures have been changed, but the underlying dynamics are ones we have seen repeatedly.

When a hospital begins developing the scope for a major redevelopment through its master planning process, it is often responding to legitimate pressures. Existing infrastructure may be aging, patient volumes are increasing, clinical programs see unmet needs, and everyone involved is conscious of the very real capacity challenges facing the health system.

Against that backdrop, there is a natural tendency to develop an ambitious long-term vision. The organization looks ahead twenty or thirty years, considers the programs and capacity it believes will be required, and begins translating that future state into potential capital investments and redevelopment priorities.

There is nothing inherently wrong with taking a long-term view, but it can be accompanied by an assumption that the project should be advanced in its most ambitious form at the outset, with the expectation that it can always be scaled back later if government determines that the proposal is too large or too expensive.

That approach can appear reasonable because it preserves the organization's goals while leaving government to determine what it is prepared to support. The difficulty is that it assumes scope can be reduced later with roughly the same consequences as making more

measured scope decisions earlier in the planning process. As the project advances, however, those two paths can produce very different outcomes.

As the planning process advances, programs, capacity requirements and infrastructure needs are translated into a proposed scope, and that scope is costed out. Assume, for illustration, that the resulting project is approximately 800,000 square feet and carries an initial capital estimate of approximately \$1.8 billion.

As the hospital advances through Stage 1.2, Proposal Development, the focus of government review is primarily on the need for the proposed services and capacity rather than the ultimate affordability of the project. What population will the hospital serve? What patient volumes support the proposed capacity? How do the proposed programs fit within the regional continuum of care? Are the underlying assumptions consistent with how services are expected to be delivered across the broader health system?

Advancement from Stage 1.2 to Stage 1.3, Functional Program, can understandably give the organization greater confidence in the direction of the project. But that advancement is not the same as approval of the capital investment required to deliver it. That distinction can become much more consequential as the project progresses.

For example, there may be a strong case for additional neonatal capacity, particularly in a growing community, but establishing that need does not by itself determine the appropriate size of the unit. The analysis still has to consider projected births, acuity, referral patterns, the role of neighbouring hospitals and the catchment population the program is intended to serve.

The same considerations apply across other programs and services. Proposed capacity has to be supported by expected activity, and that activity has implications for Quality-Based Procedures, staffing and ultimately the hospital's Post Construction Operating Plan. So the implications go well beyond what it costs to build. These additional programs and capacity can also bring ongoing operating costs that government will need to fund year after year.

Government therefore takes a holistic view of the proposal, considering whether the proposed services and capacity are supported by health-system needs, what they mean for the potential capital investment and ongoing operating funding, and how the proposal fits within a broader set of hospital capital priorities that government must balance against available funding.

The discussion is therefore about much more than the capital cost of the project. It is about the broader implications of the proposed investment.

As the hospital looks to continue to advance the proposal, it refines its demand and volume projections using CIHI and other health-system and population data, tests clinical assumptions and strengthens the case for the proposed services and capacity. This can involve multiple submissions, ongoing discussions with ministry staff and further analysis as questions are worked through. Senior leaders also continue to advocate for the project and seek its advancement through the capital planning process.

This process can continue for years (we have seen some submissions remain at this stage for more than a decade).

It would be naive to think that every organization is equally equipped to navigate the Ministry of Health capital planning process. Large hospital networks often have dedicated capital planning offices, government relations staff and people with direct experience advancing major redevelopment projects through the process. Smaller organizations may not have the same depth of experience or resources available to them, making a prolonged, multi-year advancement effort more difficult to navigate. There is a reason experienced redevelopment executives are highly sought after and often move from one health organization to another: knowing how to navigate the process, anticipate what will be required and keep a project moving has real value. None of this changes the merits of an organization's underlying need, but it can influence how effectively that need is advanced through a long and uncertain process.

The capital pipeline and affordability

Eventually, a project may secure a place in the provincial capital pipeline. While a critical and necessary step, this does not establish the ultimate dollars government will earmark for the project. In fact, this is where questions of cost and affordability begin to come to the fore.

If the hospital is fortunate, someone may recognize that the price tag associated with the proposed scope is unlikely to be approved and suggest a different approach: establish a firm affordability cap and work backwards from it. The cap forces the difficult scope decisions that had previously been deferred and may also be expressed as a maximum allowable square footage.

After several years, assume the hospital is ultimately given an affordability envelope of approximately \$1.5 billion, together with a maximum allowable project size of approximately 600,000 square feet.

The organization now has to make the difficult scope decisions it had hoped could be deferred or avoided altogether, but the conditions have changed. Construction costs have increased, service and capacity assumptions have been translated into the Functional Program and increasingly embedded in the design, and clinical groups have understandably become invested in the programs and capacity they have spent years planning around.

The \$1.5 billion envelope therefore does not simply require the hospital to reduce the original \$1.8 billion scope by \$300 million. Years of cost escalation have changed what that money can buy, and the decisions made earlier are now much more consequential.

In Part II, we examine what happens when the project has to respond to these constraints, how decisions made years earlier shape the options that remain, and why this is where complexity can become convexity.

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