4 Health and Wellness: Colchester Regional Hospital Replacement

Summary

The project to replace the Colchester Regional Hospital was approved in 2005 with a budget of $104 million. This budget was not a realistic estimate of the expected costs to build the new hospital and was not sufficient to complete construction. It was based on assumptions that were unreasonable or unsupported. It did not, for instance, consider inflation over the life of the project. The current budget of $184.6 million is still not complete; it excludes several items that should be part of the overall project budget.

The initial budget should have been considered to be only a preliminary spending approval. A schedule should have been put in place to revisit the budget regularly during construction to bring cost estimates up to date. It would then have been reasonable to expect those charged with oversight of the project to complete it within budget.

Supporting documentation prepared by the Department of Health and Wellness for Cabinet for the first budget and for two of the three subsequent budget approvals was incomplete and contained inaccuracies. The impact of this was to hinder effective decision making. While CEHHA were not involved in preparing the support, they agreed to the budgets submitted.

The new facility is over 100,000 square feet larger than the existing facility and is designed to offer more services to more people. However, there has been no analysis to determine whether additional funding will be required to operate the new facility at its intended capacity when it opens.

While ineffective budgeting practices were significant contributors to apparent cost increases, oversight and project management weaknesses by both CEHHA and Health have contributed to project difficulties and cost overruns. Some significant decisions were made without sufficient consideration of the related costs.

Since CEHHA had no experience with large construction projects, they hired a number of consultants to assist them. However, management and the Board should have more rigorously reviewed and challenged consultants' key estimates and decisions. Health had somewhat more experience but are also relying on an external consultant to manage the project for them. We have recommended responsibility for managing the construction of hospitals and other significant provincial buildings be assigned to a central government body with a high level of construction expertise.

4 Health and Wellness: Colchester Regional Hospital Replacement

Background

Project History

4.1 The existing Colchester Regional Hospital was built in 1965, while the annex building, which houses administration and mental health functions among others, was built in 1926. The facility is the oldest regional hospital in Nova Scotia. There were plans for a new inpatient tower and extensive renovations to the rest of the facility in 1985 but the project was canceled before significant work had been completed.

4.2 In 2001, government gave Colchester East Hants Health Authority (CEHHA) approval to complete a role study outlining the scope of services provided in the district and looking forward 10 to 15 years to identify future services. A role study considers district demographics and services offered in surrounding districts. It is the first step towards getting a significant capital project approved by the Department of Health and Wellness (Health).

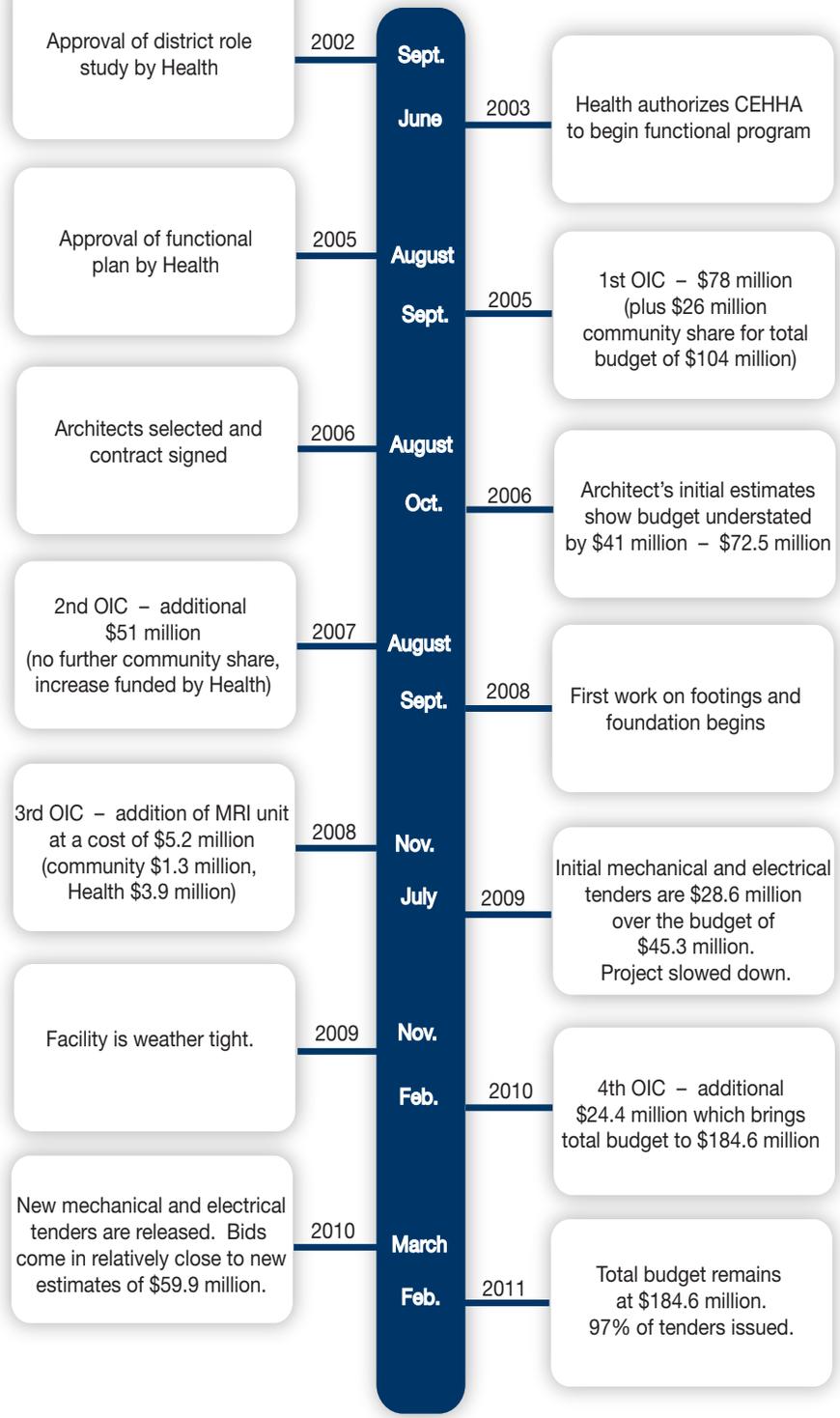
4.3 In September 2002, Health approved the role study. CEHHA started work on a master program and master plan outlining the programs and services to be offered in the new facility using narratives and basic drawings to describe the size, setup and location of departments within the building.

4.4 In June 2003, Health provided $1 million to allow CEHHA to proceed with a functional plan for the new facility as well as to start the site selection process and develop a schedule for project completion. A functional plan provides the details that will be required for an architect to design the building.

4.5 After various iterations of the functional plan, Health provided its final approval in August 2005. In September 2005, an Order-in-Council (OIC) approved $78 million in provincial money which, combined with the community commitment of $26 million, provided an initial project budget of $104 million.

4.6 CEHHA hired an internal project manager and a facilities planning director in early 2006. In August 2006, the lead architects were announced followed by the construction managers approximately one year later. In July 2007, the initial project manager resigned; an external project manager was hired in September. The official sod-turning was in October 2007.

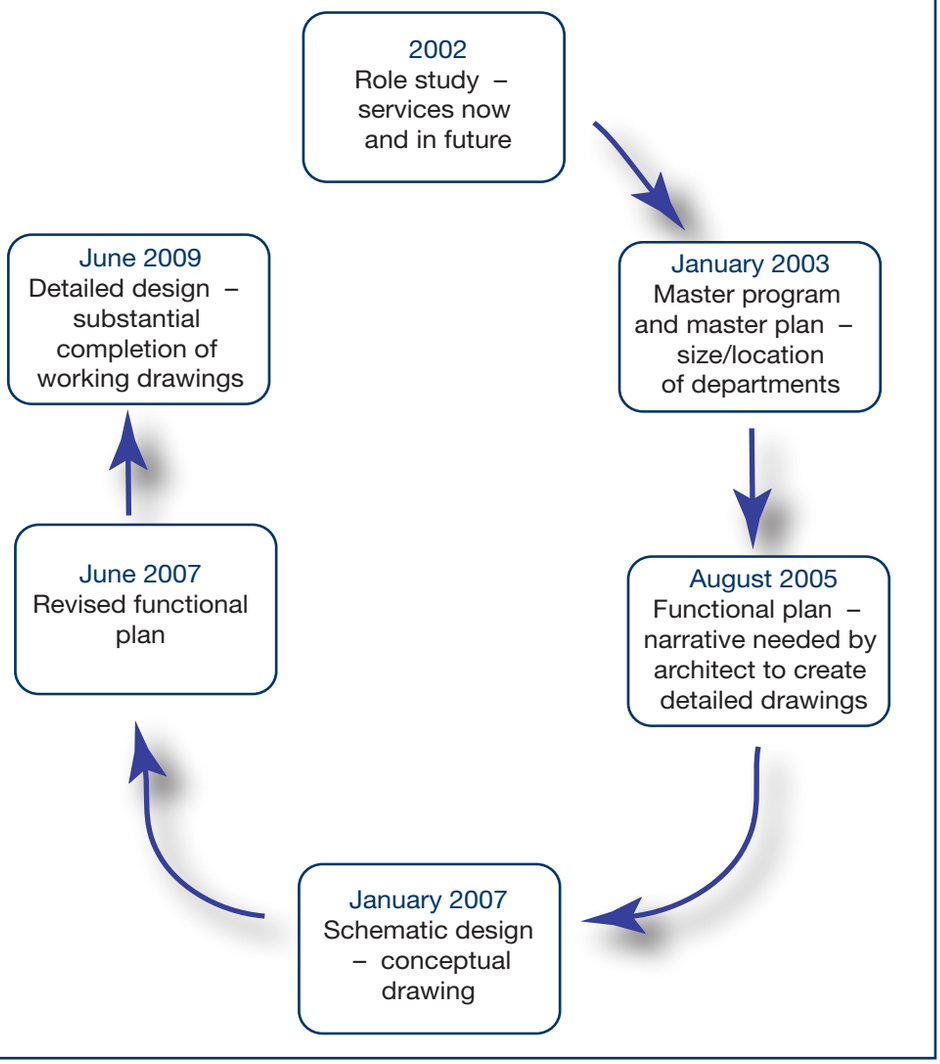
Colchester Regional Hospital Replacement Project Timeline



4.7 Once the design team began working with the functional plan, they soon identified that the existing project budget of $104 million would not be sufficient. The design team's initial estimates of the cost to construct the new hospital ranged from $145 million to $176.5 million. In March 2007, after ongoing negotiations, Health and CEHHA agreed to a budget of $163 million; this was further reduced to $155 million in June 2007. The $155 million budget was approved by Cabinet in August 2007. The province agreed to cover the entire $51 million increase in the project budget with no further funding required from the community.

4.8 The first approved design of the new facility was a schematic design (conceptual drawing) in January 2007. The detailed design development document was approved in April 2008. In September 2008, the first work on the footings and foundation began.

Key Design Stages



4.9 In November 2008, Cabinet approved the addition of an MRI to the new hospital. Original plans had included an MRI but it was removed prior to the second OIC. Since this was not part of the approved plan and work was underway, this addition required design changes. These changes plus the MRI equipment and installation added $5.2 million to the overall project cost.

4.10 In July 2009, when mechanical and electrical tenders closed, all the bids far exceeded the budgeted figures. The project slowed significantly until February 2010 when the most recent OIC was approved, adding another $24.4 million to the budget, bringing the current project budget to $184.6 million.

4.11 The new hospital was originally scheduled to open in 2010. At the time of our audit, 97% of construction tenders had been awarded; the hospital is scheduled to open its doors in the summer of 2012.

Audit Objectives and Scope

4.12 In March 2010, Treasury Board asked our Office to undertake an audit of the Colchester Regional Hospital replacement project. We started the audit in 2010 and finished in early 2011.

4.13 The audit was conducted in accordance with Sections 18, 21 and 22 of the Auditor General Act and auditing standards established by the Canadian Institute of Chartered Accountants.

4.14 The audit objectives were to assess:

- whether roles and responsibilities were clearly defined, documented and communicated at the start of the project;
- the adequacy of Health's oversight of the project;
- the adequacy of CEHHA's oversight of the project;
- the adequacy of processes used to determine and adjust budgets for the project;
- the adequacy of processes used to manage project costs;
- the adequacy of the project management framework used for the Colchester Regional Hospital replacement project;
- whether the project procurements were in compliance with the applicable Province of Nova Scotia Procurement Policy and CEHHA procurement policies;

- whether the overall procurement strategy was appropriate; and
- the adequacy of the process followed to prepare RFPs and award final tenders.

4.15 Certain of the audit criteria for this audit were obtained from the Project Management Body of Knowledge (PMBOK) while others were developed by our Office for this audit. While our office used PMBOK as a guide during our audit, CEHHA did not use PMBOK during the project, although CEHHA hired experienced project managers. The objectives and criteria were discussed with, and accepted as appropriate by, senior management at CEHHA and Health.

4.16 Our audit approach included examination of the project documentation and interviews. We met with management of CEHHA, their project managers, construction managers and the lead architects on the project. We also met extensively with Health staff and staff at CEHHA responsible for day-to-day operations of the project.

4.17 We wish to acknowledge the cooperation and efforts of staff at the Colchester East Hants Health Authority and at the Department of Health and Wellness, as well as their various consultants, for their help in completing this audit.

Significant Audit Observations

Budget Timing

Conclusions and summary of observations

The initial budget for the replacement hospital was prepared three years before detailed drawings of the facility were completed and several years before the planned opening date. At such an early stage, the total approved amount should be considered only an initial commitment to be finalized over time. Although it was clear this budget was not sufficient, it was used as the target to be achieved. Placing too much importance on this initial amount combined with incomplete and inadequate budgets as the project progressed created an unattainable target, thereby ensuring cost management processes could never be sufficient to keep the project on budget.

4.18 *Initial budget* – The initial $104 million budget was finalized in September 2005 when the expected completion date for the facility was 2009-10. At that point, CEHHA had an approved functional plan. A functional plan does not include any drawings. It provides narrative details for each room in the

new hospital and then adds a percentage to each room to determine the total departmental gross square feet. This total is multiplied by another grossing factor to determine the building gross square feet, which represents the full size of the facility. Finally, the building gross square feet is multiplied by the estimated cost per square foot to determine the total estimated cost of construction. Other amounts such as soft costs, including furniture and equipment and consultants fees, and contingencies are estimated as a percentage of the total construction budget.

4.19 The initial project budget was based on several estimates and rough concepts only with no drawings. These are standard practices in the construction industry and are used to establish preliminary project cost estimates. In this instance, the estimate was labeled as a project budget, but should not have been because the project was not far enough along. Starting from this point meant no cost control measures could ever be successful in keeping the project within the initial budget.

4.20 The documentation supporting the initial OIC request prepared for Cabinet did not adequately explain that these were merely preliminary estimates which would likely increase significantly over the life of the project. There were other deficiencies in the documents supporting the OICs which are discussed further in this Chapter.

4.21 Press releases from CEHHA following the approval and announcement of the funding included the following. "*The total project cost is about $104 million... After years of planning and consultation with our health-care team and communities, we finally have the commitment we need to bring this project to fruition*."

4.22 At this stage of planning a project, it should be made clear to Cabinet and to the general public that this is an initial commitment which will be reviewed in the future. There should be a schedule in place to revisit the overall budget to provide an opportunity to ensure planning is proceeding as intended and to update the project budget before construction begins. By updating the budget to ensure it is reasonable, management charged with oversight of the project can have a good understanding of the expected costs and can then be realistically expected to proceed within that budget.

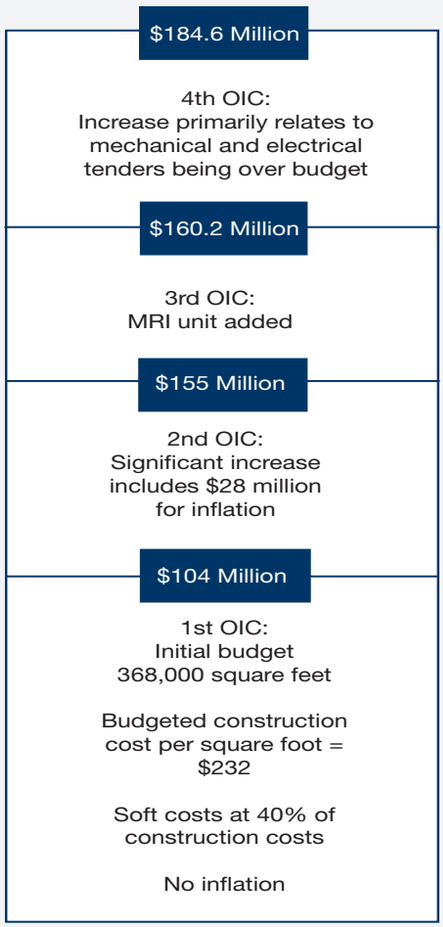
Recommendation 4.1
The Department of Health and Wellness should establish a schedule to review the preliminary budget and approve the final project totals for future capital projects.

Budget Inadequacies

Conclusions and summary of observations

The initial budget for the replacement hospital and subsequent increases which were approved by Cabinet over the life of the project were based on incomplete and inaccurate information. The initial budget lacked any estimates of potential inflation; it was never sufficient to build a new regional hospital. Subsequent budgets have been based on inaccurate information and commitments to reduce costs or facility size that have not always been carried forward to the actual construction. Ineffective budgeting practices have made it difficult to determine to what degree subsequent cost overruns may have been the result of management weaknesses, incomplete and inaccurate information, or unavoidable changes in the market or to building codes and standards. Further, there has been no assessment of the expected operating costs for the new facility. If CEHHA is unable to obtain increases in operating funding from Health, it may not be able to operate the new hospital at its intended capacity.

History of Cabinet Funding Approvals



First Order-in-Council

4.23 In September 2005, the first OIC request was approved providing funding for construction of a new regional hospital in CEHHA. This OIC committed government funding of $78 million, which represented 75% of the total project budget of $104 million. The remaining funding was to be provided by the community.

4.24 The $104 million budget was created through the functional planning process. The first draft of the functional plan included a budget of $126 million; both Health and CEHHA worked to reduce this amount before requesting Cabinet approval. A number of key items were taken out to move from $126 million to $104 million.

- Inflation ($8 million) – Construction cost estimates were presented in current-day dollars with no efforts to estimate construction inflation in the coming years.
- Physician offices ($2.5 million) – Costs to build onsite offices for physicians were removed. However, CEHHA still intended to include this space in the facility and asked Health to allow CEHHA to get an external loan to cover these costs.
- Physical plant ($4 million) – The cost of the physical plant for the new hospital was removed without a realistic alternative in place.
- Space contingencies ($2 million) – Health told CEHHA to remove all space contingencies from the budget, leaving no margin for error when designs were developed from preliminary drawings.

4.25 These decisions ultimately made the initial approved budget a meaningless number for planning purposes. Our concerns are discussed in more detail below.

4.26 *Construction inflation* – Health told CEHHA to remove inflation; this meant the project budget request to Cabinet was in current day dollars (2005). This appears to have resulted in a budget reduction of approximately $8 million, or 6.3%.

4.27 Inflation is likely to be a significant factor on a large construction project. The time frames involved are typically very long and costs increase over time. The original projected completion date was 2009-10, so this project was expected to take at least four years.

4.28 The final version of the functional plan approved by CEHHA and Health contains the following note.

> *"The Department of Health has recommended that the Health Authority submit the project budget using the cost of construction as of October 2005. Currently the project cost is estimated to the mid-point of the project (October, 2007). If the cost of construction as of October 2005 is used and no escalation is allowed for, the project budget would not be sufficient to complete the project. Additional information is required from the Department prior to proceeding with this."*

4.29 It is clear CEHHA and Health were both aware that removing inflation would mean the approved budget would not be sufficient to build a new hospital. However there were no plans as to how this issue would be handled in the future.

4.30 The information prepared for Cabinet supporting the OIC request clearly states inflation was not included. The document states that these costs are based on January 2005 dollars and may be impacted by future CPI and possible construction industry increases.

4.31 While this information is technically accurate, it is understating the situation to suggest that the costs may be impacted. Annual inflation in Nova Scotia had averaged just over 2% annually for the previous decade and had never been negative. It was clear that costs were going to increase. Additionally, Health was aware that the preliminary budget had included $8 million for inflation which was removed before asking Cabinet to approve the initial budget. Inflation represented a potentially significant increase to the approved budget and should have been estimated. Ultimately, the second OIC approved just two years later included $28 million for inflation.

4.32 *Physician offices* – The original plans for the new hospital included $2.5 million for office space that physicians currently renting space elsewhere could then rent from CEHHA. This was removed from the initial budget presented to Cabinet. At that time, CEHHA still intended to build space for physician offices. Management planned to ask Health to grant approval for CEHHA to obtain an external loan to cover the associated costs.

4.33 The documentation prepared for Cabinet did not indicate that the plans still included physician office space. There was no indication that CEHHA was seeking to have this space funded through an external loan. Ultimately the funding would still impact the overall cost of the facility and the province's financial statements but the documentation given to Cabinet did not contain this information. Subsequently, Health rejected CEHHA's request and the plan to include physician offices within the new facility was canceled.

4.34 *Physical plant* – CEHHA management hoped to find an external firm to build a physical plant and sell electricity to CEHHA for the new hospital as well as sell any excess to the power company. This would mean that the new hospital would not require its own physical plant. The $4 million cost of the plant was removed from the original budget before it was presented to Cabinet for approval. However at that time, there were no firm plans to achieve this, although CEHHA management informed us they had talked with one firm about pursuing this option. Ultimately, CEHHA was not able to find a company to agree to participate and although alternative options were explored, the physical plant funding was added back to the project in the second OIC. Cabinet should have been made aware that amounts had been removed from the initial budget without detailed plans to achieve the cost reduction.

4.35 *Space contingencies* – As part of the effort to reduce the initial estimate from $126 million to $104 million, Health asked CEHHA to remove all space contingencies from the budget. The first draft of the budget included $2 million to address any extra square footage required to cover unexpected changes to plans or requirements. At this stage of the process, there were no drawings of the facility, only the functional plan, which estimated the new facility at around 368,000 square feet. Buildings of that size should allow for possible changes during preliminary planning; space contingencies should not have been removed to achieve the desired budget amount. Doing so represented a significant risk to the project and the documents supporting the OIC should have identified this risk so that Cabinet would have a full understanding of the initial budget proposal.

4.36 *Impact of initial budgets* – By removing inflation estimates and space contingencies, as well as making further cost reductions with no concrete plans to achieve these goals, CEHHA and Health created an unrealistic budget which both parties should have known was not achievable. We do not know why they agreed to move forward with the project based on an understated budget of $104 million. This action did not demonstrate appropriate fiscal responsibility and accountability by either party.

Second Order-in-Council

4.37 Subsequent to the original OIC, a design team was selected in August 2006. That team prepared new budgets based on initial concepts for the new hospital. These budgets were presented to CEHHA in the fall of 2006. The revised estimated project cost was between $145 million and $176.5 million; making clear the inadequacy of the initial $104 million budget. Over the next year Health and CEHHA reviewed these estimates and negotiated in an attempt to reach a mutually agreed upon budget.

4.38 In March 2007, Health and CEHHA agreed to a budget of $163 million; however this option was never presented to Cabinet. Finally in August 2007, CEHHA and Health agreed on a budget of $155 million and a second OIC was approved. This OIC provided an additional $51 million in funding from the province. We also identified a number of issues with the supporting information presented to Cabinet with this budget.

4.39 *Hospital size* – The documentation prepared for Cabinet stated the new hospital would be reduced by 28,000 square feet. This would have resulted in a final facility size of around 340,000 square feet. The actual size is 384,000 square feet.

4.40 Subsequent to the OIC, Health approved a size increase to the facility of approximately 7,100 square feet to provide space for an MRI and to enclose certain areas with exterior walls. CEHHA management informed us that differences in how the facility is measured also represented an additional 8,500 square feet. However, together these changes only comprise around 16,000 square feet.

4.41 CEHHA provided evidence showing they identified a number of areas to reduce the size of the various departments in the new hospital in response to the commitment in the second OIC. Even with the increases in space and measurement differences discussed above, these changes should have resulted in a reduction to the total building size of over 19,000 square feet. The actual size is almost 384,000 square feet, 44,000 square feet larger than the size approved by Cabinet.

4.42 As discussed earlier, departmental gross square feet is multiplied by a grossing factor to allow items such as hallways, plumbing and electrical, to determine building gross square feet. The grossing factor used for the early estimates on this project proved to be too low. Over the life of the project to date, CEHHA has increased this grossing factor from 25% to 30%; the actual final figure is approximately 45%. While departmental useful space was reduced in response to the commitment in the second OIC, the grossing factor in use at that time was so inadequate that the overall size of the hospital actually increased. This is discussed further in the project management and oversight section later in this Chapter.

4.43 Using a grossing factor which was too low meant that the budget of $155 million was once again insufficient. Once an adequate grossing factor was used, a larger hospital had to be built than originally anticipated and this impacted the cost of the facility.

4.44 As discussed later in this Chapter, CEHHA did not analyze the grossing factor and was not monitoring its impact on the budget. This lack of oversight meant the attempt to achieve a significant reduction in space only

managed to reduce the usable space in the hospital while the total size, and overall costs, actually increased.

4.45 *Furniture and equipment* – When CEHHA agreed to the $155 million budget, management suggested that if they came in under budget, they would use the remaining budget funds to purchase furniture and equipment. An email from CEHHA to Health stated *"The concern with this would be the ability to equip and furnish the building with $15,300,000. This only represents 10% of the total project cost when most are between 15 and 20%."* Ultimately, the budget for furniture and equipment was approximately 12% of the total budget approved in the second OIC. Subsequent to approval of the second budget, Health have provided $3.3 million in funding for new equipment at the Colchester Regional Hospital. This new equipment will reduce the gap as it existed at the time of this OIC.

4.46 The current furniture and equipment budget is still approximately $4 million less than estimated requirements, even considering capital equipment purchases as noted in the previous paragraph. In order to help mitigate the gap in the equipment budget, CEHHA proposed a number of changes which would result in transferring some capital costs to future budgets by taking more furniture and equipment from the existing hospital when they move to the new facility. Management hopes to replace the older furniture and equipment over time through capital funding from Health or through CEHHA's Foundation. However there is no plan showing how this will be achieved or whether it is even possible.

4.47 *Information prepared for Cabinet* – The documentation prepared for Cabinet to support the second OIC request addressed why the budget needed to increase from $104 million to $155 million. The largest identified increase was $28 million as a result of inflation. This was excluded from the initial budget. Space contingencies had also been removed from the initial budget; these were still not reflected in this budget.

4.48 We identified two significant inaccuracies in the documentation supporting the second OIC request prepared for Cabinet by the Department of Health and Wellness.

- Site preparation costs – The documentation indicated part of the budget increase was to cover $10 million in additional costs for site preparation because the site had not been selected at the time of the original OIC. This statement was wrong; the site was selected and publicly announced in February 2005, more than six months before the first OIC was approved.

- Physical plant – The documentation also noted an additional $3.3 million was required because Truro had canceled plans to build a

heating plant. At the time of the original budget, CEHHA removed $4 million in hopes they could find a private company partner to build their physical plant. Subsequent to that decision, Truro considered its own plant but decided not to move forward with this project. It is not accurate to say that Truro's decision to cancel its plans caused an increase to the budget for the new hospital. The increase to the budget was required because CEHHA and Health agreed to remove the line item from the original budget without any formal plan or analysis to address how this cost reduction would be achieved.

Third Order-in-Council

4.49 In November 2008, Cabinet approved the addition of an MRI unit to the new hospital. An MRI had been in the original plans, but was removed prior to the second OIC. This increased the total hospital budget by $5.2 million. The approval was for an additional $3.9 million in government funding, with the remaining $1.3 million coming from community funding.

Fourth Order-in-Council

4.50 As part of the second budget, CEHHA had estimated total mechanical and electrical costs at $45.3 million. In July 2009, the mechanical and electrical tenders for the new hospital closed. The lowest bids totaled $73.9 million, $28.6 million more than CEHHA's estimate. Management concluded the tenders could not be awarded because there was such a significant difference between the bids and estimated costs. The project slowed down significantly for nine months while an extensive review of the tenders was completed and a variety of explanations were presented for cost overruns. These are discussed further below.

4.51 In February 2010, a fourth OIC was issued in which Cabinet approved an additional $24.4 million in funding, bringing the total project budget to $184.6 million. The $24.4 million increase resulted from mechanical and electrical tender overages offset by cost savings identified in other areas.

4.52 *Changes to design* – After the initial tender, a cost consulting firm was hired to provide an analysis of the changes between the plans included as part of the tender packages and those originally approved at the design development stage (conceptual drawings, no detailed drawings yet). They identified a significant increase in the size of the facility (discussed earlier in this Chapter) along with numerous items which had changed or which were added to the plans subsequent to the completion of the design development document. These changes often result from changes to code or standards, or may simply be due to a change in plans by the owner. In this instance, changes included items such as a significant increase in the

number of plumbing fixtures and doubling of feeders to electrical panels, and led to approximately $19 million or two-thirds of the $28.6 million in cost overruns.

4.53 Construction projects generally have cost estimates when final design documents are 30%, 60% and 90% complete. This allows project owners to identify significant items or cost changes which may not have been included in early design documents. CEHHA chose not to prepare cost estimates at the 30% or 60% completion stages of the project. Instead, estimates were prepared at the schematic design stage before any detailed drawings are completed. There were no further estimates until the pre-tender, or 90% complete stage when detailed drawings are near or at completion.

4.54 The changes identified by the cost consultants illustrate the need for regular estimates during the design process. While these changes may have been necessary, their impact should have been identified earlier in the design stage and should not have been a surprise to CEHHA when the tenders closed. Had these estimates been completed earlier, bid results might have been expected and it may not have been necessary to slow the project down for nine months in mid-construction; changes may have been identified early enough to avoid delays.

4.55 *Tender document completeness* – We have concerns regarding whether the original tender documentation provided to potential bidders was complete. 394 pages of addenda, with changes, were issued subsequent to the public release of the tenders. In a July 2008 status report, the project manager noted concerns regarding the timeliness of the architect's delivery of review documents related to tenders, and the possible impact this could have on the volume of addenda required for tenders and potential change orders once contracts were awarded. The volume of additions and changes may have meant uncertainty for the bidders, causing them to build some contingencies into their bids in case they had missed anything significant in all of the changes.

4.56 *Market conditions* – We realize the market was going through a period of high inflation and that this contributed to the cost increase. CEHHA management attributes much of the significant cost increase in mechanical and electrical tenders to changes in the construction market at the time. Management provided external support for the change in the market rates which showed growth in mechanical and electrical costs averaged around 8% from 2006 through 2009. This growth spiked to 28.5% in 2010, which would represent market costs around the time of the mechanical and electrical tenders. These changes are still not sufficient to explain the cost overruns experienced on the tenders.

4.57 It would be reasonable to assume the mechanical and electrical budgets considered the annual growth of 8%, leaving an unexpected increase of approximately 20.5% to impact the tenders. The original budget for the tenders was $45.3 million. An unexpected market fluctuation of 20.5% would result in an increase of just over $9 million. Even if the entire 28.5% market increase is considered, the impact would only be $13 million. The lowest bids from the tenders exceeded budget by $28 million. This leaves at least $15 million of unexplained budget overruns caused by other factors.

4.58 As discussed earlier, a post-tender review identified $19 million in increases to the project scope from the design development estimates, which were used to develop the budget. Management informed us they believe the pre-tender estimates identified all of the scope changes considered in the post-tender review and that the significant budget overruns on the mechanical and electrical tenders resulted from changes in market rates or inflation.

4.59 Before releasing the tender for bids, CEHHA had to get the Department of Health and Wellness to approve the pre-tender estimates. The documents CEHHA submitted for this approval identified $1.1 million in project scope changes; none of the significant items which comprised the $19 million identified in the post-tender review were noted. It appears that the pre-tender estimate failed to identify significant changes from the design development stage when there were no detailed drawings. As a result, the bids submitted were far over budget.

4.60 CEHHA management have acknowledged that there were some errors in the pre-tender estimates; however as previously stated, they informed us they believe the major impact on the mechanical and electrical tenders was due to inflation. The evidence which management provided during the audit shows there were significant other factors involved; at most inflation or market conditions contributed to approximately $13 million or 46% of the cost overruns.

4.61 C*osts of the delay* – The final OIC request included $3.9 million to cover costs associated with the project delay while tender results were evaluated and solutions sought. These costs include monthly costs to employ the various consultants on the project as well as claims for extra costs due to delays from consultants who were unable to proceed with their work during the delay.

4.62 *Additional items* – $1.8 million for previously unfunded items was also included in the fourth OIC. These items, such as the final fit out of the cafeteria, were either not identified previously or had been excluded in the hope of finding an alternative funding solution.

4.63 *Savings identified* – Documents supporting the final OIC also showed that CEHHA had identified a number of areas in which they could reduce costs. The total for these reductions was around $10 million, consisting of:

- $1.4 million through value engineering changes;
- $6.6 million through budget reallocations; and
- $2 million through reductions to furniture and equipment.

4.64 Our concerns with the value engineering process on this project and the current furniture and equipment budget are discussed elsewhere in this Chapter.

4.65 The $6.6 million reduction through budget reallocations is to be achieved by using existing contingencies to offset some of the budget overruns. Since most work has been tendered and construction is well underway, this is a reasonable approach.

Concerns with Current Budget

4.66 *Background* – The current budget is missing a number of items which will ultimately make it inadequate and will likely require more funding in the future. These issues are discussed further in the following paragraphs.

4.67 *Demolition costs* – $1 million to demolish the existing hospital was removed from the budget prior to the second OIC. CEHHA management informed us that they hope to sell the building but there has been no formal valuation of the building or surrounding land, and CEHHA management have not yet taken any action to start this process. They also acknowledged a building sale is not likely. If CEHHA is not able to sell the old hospital, management plan to use capital funding to cover demolition costs in the year the building is torn down. This may have an impact on the hospital's capital budget in that year.

4.68 *Furniture and equipment budget* – CEHHA management have lists of furniture and equipment requirements for the new hospital. The current furniture and equipment budget is approximately $4 million less than expected costs. The only mitigation plan in place at the time of our audit was to take much of the furniture from the existing hospital and to replace it as possible through annual capital budgets going forward. This will help ensure the equipment in the new facility meets estimated requirements and will only compromise on the furniture. CEHHA management have not prepared a detailed schedule showing which furniture can be reused, but there are detailed listings of the equipment required for the new facility.

4.69 *Operating costs* – Throughout the project, Health has reiterated that this is a replacement facility and there are to be no additional services or operating costs for the new hospital. The current budget includes $1.9 million to cover increased costs for the provision of environmental services and plant operations for a much larger building than the present facility. CEHHA has also received subsequent approval for some new programs, such as urology, which will be offered at the new hospital.

4.70 The supporting documentation for the first OIC request notes that the new facility is intended to offer some services which cannot be offered currently due to the size of the existing hospital. It also states that the new hospital should relieve some pressure from CEHHA residents seeking services in the Capital District Health Authority. When these comments are considered together, it is clear that CEHHA planned to offer more services to more people and cannot reasonably do so without any increase in operating costs.

4.71 Compounding this issue is the fact that there has been no analysis or review to determine what the operating costs of the new facility are likely to be. The existing hospital is 45 years old with some services being offered in an 85 year old annex. The total square footage of the current facility is approximately 260,000 square feet. The new facility is over 100,000 square feet larger and has a more spread-out design, yet no analysis has been done to determine whether the new facility can be operated at its intended capacity when it opens.

4.72 It is important for both Health and CEHHA to know the costs of operating the new facility. Health needs a plan to either provide the required funding or reduce services; CEHHA needs to know what funding is going to be available and prepare mitigation strategies as necessary.

Recommendation 4.2
The Department of Health and Wellness and Colchester East Hants Health Authority should prepare a comprehensive assessment of the funding required to operate the new facility at its intended capacity and agree on the level of funding to be provided.

4.73 Throughout this section, we have identified a number of instances in which information the Department of Health and Wellness prepared for Cabinet was inaccurate or incomplete. It is the Department's responsibility to provide Cabinet with complete and accurate information so that Cabinet has all the information it needs to make decisions.

Recommendation 4.3
The Department of Health and Wellness should put a process in place to ensure only complete and accurate information is presented to Cabinet.

Project Management and Oversight

Conclusions and summary of observations

We have identified significant weaknesses in the management and oversight of this project. Estimates included in the original budgets were not adequately supported. The cost per square foot used to prepare the initial budget was based on the costs of another facility but no assessment was done to ensure the two hospitals were comparable. The final design of the hospital is different from what was originally planned and is fairly complex, yet there was very little information to support this final design selection and costs of various design options were not considered. Monitoring and estimating during the design stage were not adequate. All of these issues led to changes to the intended scope without Health and CEHHA management realizing the full impact on the project.

4.74 *Background* – A large construction project such as the new hospital requires a strong project management framework and significant oversight efforts to identify risks, ensure costs and time budgets are managed, and to mitigate problems when they occur. Detailed roles and responsibilities for Health and CEHHA were not clearly defined and communicated at the start of this project. During the project, Health brought in a capital spending manual which defines high-level roles for capital projects. Although high-level roles and responsibilities were understood by both Health and CEHHA at the start of the project, we identified a number of issues which led us to conclude oversight by both parties was inadequate. Similarly, CEHHA has a project management framework which on the surface appears adequate; however, the significant issues identified throughout this Chapter indicate there were weaknesses in the management of this project. These matters are discussed further in the following paragraphs.

4.75 *Grossing factor* – Before detailed design documents are prepared, large construction projects need estimates of the total required square feet. This process starts by determining the space for each room and adding these together to help determine total requirements or departmental gross square feet. Space needed for common areas such as hallways and stairwells as well as mechanical and electrical items such as ducts and plumbing must also be estimated. This is accomplished by multiplying departmental gross square feet by a grossing factor to estimate the increased space needed and to determine the total estimated building size or building gross square feet.

4.76 The original budget for the new hospital was determined using a grossing factor of 25% of departmental gross square footage requirements. This was increased to 30% in the second approved budget; the actual is approximately 45%. It is clear that the original 25% was not a realistic estimate. The new hospital is 384,000 square feet, of which approximately 118,000 is for areas such as hallways, stairwells and space for mechanical and electrical requirements such as ducts and piping. This also suggests the possibility that the design of the new facility may not be the most efficient as this represents almost one-third of the hospital.

4.77 The grossing factors of 25% and 30% were both based on recommendations from CEHHA's consultants. Management did not request any support for these factors nor did management have a plan to review whether the grossing factor needed to be updated over the life of the project.

4.78 The shape of a building can have a significant impact on the grossing factor and resulting costs of construction. In this case the new hospital has been designed as a spread-out, low-storey building. This results in a large amount of wall and roof space which can cause the grossing factor to increase. The initial grossing factor was based on a plan for a relatively simple design, and was not reviewed or revised to reflect the design which was selected. Design decisions should be made in concert with a review of the grossing factor to ensure they do not have a significant negative impact on the project costs. CEHHA management informed us that their architects felt the design was cost efficient, but no evidence was provided to support this and no analysis was requested by management to substantiate this claim.

Recommendation 4.4
The Department of Health and Wellness should put a process in place to ensure management in charge of significant capital projects complete an adequate review and challenge of key estimates prepared by consultants.

Recommendation 4.5
The Department of Health and Wellness should put a process in place to require regular reviews of grossing factor estimates at significant stages of large construction projects.

4.79 *Soft cost contingencies* – Soft costs are those not directly attributable to constructing the building and are typically estimated early in the project based on a percentage of the expected construction costs. Soft costs would generally include design fees, scope contingencies and the cost of the various consultants required to manage the project. The original budget approval included a soft cost contingency of 40% or approximately $30 million. This figure was prepared by the consultant responsible for the

functional plan and CEHHA management did not request any support or assess it for reasonableness. Management should have tried to obtain an understanding of the rationale for such a significant project cost.

4.80 Currently, soft costs are running at approximately 40% of project costs, which indicates the consultants' estimate was reasonably accurate. However it is still important for parties responsible for oversight to have an adequate understanding of how soft costs were estimated.

4.81 *Cost per square foot* – A significant driver of early construction estimates is an overall cost per square foot. The initial budget for the new hospital was based on the cost per square foot of the new Amherst hospital which opened in 2002. While this was the most recent hospital construction project in Nova Scotia, three years had passed when the first budget for the Colchester Regional Hospital was prepared. The cost per square foot of the Amherst facility was increased by 1.9% per year to calculate the amount used in the initial budget. As discussed earlier, the initial approved budget did not include inflation over the construction period. The initial budget was based on a cost of $232 per square foot. The current cost per square foot for the actual construction is $358. This difference is the result of a number of factors, such as gross up to determine space requirements, design decisions and market inflation.

4.82 CEHHA management informed us they felt the Amherst facility had been a reasonable comparison due to the similarities between the two facilities. No formal analysis was prepared to compare the two hospitals to ensure the comparison was appropriate. The Amherst hospital is around 160,000 square feet while the Colchester replacement hospital is 384,000 square feet. Given the relative size of the two facilities and the differences in the size of the communities they serve, it would be appropriate to have a more thorough analysis showing the two are reasonable comparatives for construction costs. In this case, both CEHHA and Health failed in their respective oversight roles because they did not ensure the figure used was appropriate.

4.83 *Design changes* – Support for the initial OIC indicated the new hospital would be comprised of two buildings. One building was to house the health care facility, while the second would be for administrative functions. The information prepared for Cabinet noted that moving the administration functions into a separate building would reduce the construction costs of the administration building by approximately 60% compared to those for a health care facility due to reduced standards and requirements. At this stage, there were no drawings of the proposed facility.

4.84 In 2006, when the architects presented CEHHA with their suggested designs for the building, they recommended a single building approach with three

wings. The architects gave a presentation to project management outlining four options and recommending the three-wing approach that was selected. No mention was made of the two-building approach originally planned. Three of the four options were variations of the three-wing layout and the fourth option was a high-rise building. There was no analysis of how these approaches compared to the original intended design, nor was there an explanation for why the original plans were changed.

Aerial View of New Hospital – March 2010

Source: Colchester East Hants Health Authority

4.85 The architects' presentation provided pros and cons for each option. All of the options offered opportunities for future expansion. Most of the pros and cons listed appeared reasonable with one exception. The discussion of the high-rise option noted that necessary adjacencies, meaning keeping interdependent departments close together, could not be achieved. Intuitively the use of elevators would suggest that adjacencies would be possible to facilitate regardless of the shape of the building. Management informed us they were trying to minimize the risks of dependency on elevators.

4.86 The presentation did not discuss the potential costs of any of the alternatives. CEHHA management informed us they did not consider the impact on costs of the various design options. One specific impact of this decision was moving administrative functions back into the main hospital building. The second approved budget included an increase of $4.5 million related to this design change.

4.87 Both CEHHA and Health should have considered the impact on costs when approving the design for the new hospital. Failure to obtain any information regarding the cost of each option and failure to assess the change from the original approved approach represent a significant breakdown in the oversight function for this project.

4.88 Overall, there are certain aspects to the building design which cause concern. It is usually more expensive to build a spread-out facility with more wall and roof space than to build a simpler, square facility, meaning that the more elaborate design may have contributed to the increase in the grossing factor to 45% or almost one-third of the building.

4.89 The entry way and the three-storey, glass-walled cafeteria are also examples of design features which while esthetic, may be needlessly expensive. The cafeteria has been the subject of many discussions, and early value engineering processes suggested not completing this. In an explanation for rejecting one suggestion not to complete the cafeteria as designed, the architect is quoted as saying: "*Esthetic impact in that this space is the first space you see as you approach the facility – design intent was that it was to represent the gathering place (similar to a Maritime kitchen).*"

4.90 Decisions regarding overall design should have considered the costs of various alternatives.

Recommendation 4.6
The Department of Health and Wellness should put a process in place to ensure design decisions are made with due consideration of the impact on costs for future construction projects.

4.91 *Leadership in Energy and Environmental Design (LEED) certification* – LEED is an internationally recognized green building certification system. There are varying levels of certification, based on accumulating points for certain standards or approaches in constructing or operating a building. Silver certification was the original objective of the replacement hospital.

4.92 Specific funding for LEED was removed prior to the first budget but $3 million was added back to pursue LEED Silver according to the details behind the second budget. Shortly after the second OIC was approved, project management, which included CEHHA management and Board members along with Department of Health and Wellness management, decided they would not pursue LEED Silver, but instead would simply seek LEED certification. CEHHA management informed us that this decision included an agreement they would no longer spend any money pursuing LEED points. This effectively moved the $3 million in funding approved for LEED Silver certification to the rest of the project.

4.93 CEHHA management attempted to identify the potential costs of seeking LEED points near the start of the project; costs of LEED certification have not been tracked over the course of the project. Management informed us they cannot differentiate money spent on good building practices from costs to achieve LEED. Without any tracking, it is impossible to determine whether the commitment not to spend money on LEED certification has been met.

4.94 We are not suggesting that environmentally friendly buildings are not an appropriate goal. However, pursuing LEED certification without any consideration of the costs of doing so does not demonstrate responsible project oversight.

4.95 This is another example of a decision which was made without adequate consideration of the costs involved.

Recommendation 4.7
The Department of Health and Wellness should put a process in place to ensure decisions to seek LEED certification for construction projects are supported by an analysis of the costs. Costs should then be tracked over the life of the project.

4.96 *Value engineering* – Value engineering is a common process on construction projects to identify areas in which better value could be achieved without compromising construction quality or changing the intended use of the facility.

4.97 Although there was a value engineering process completed on the replacement hospital, we identified significant issues with this process. We examined the value engineering logs and found little support for the decisions reached. Many items did not have dollar values assigned to them. Without knowing how much a change will either cost or save the project, it is impossible to make appropriate decisions or to complete the degree of oversight that should be in place for a project of this size.

4.98 *Change management* – Change management is also a routine part of a large construction project. Changes occur for any number of valid reasons. Change order management is a key factor in controlling budgets, because while many changes are needed, not all suggestions are required and some may increase project costs unnecessarily.

4.99 We found CEHHA's change order policies and procedures were adequate. We tested 30 change orders, and found some minor deficiencies in which established processes were not followed.

4.100 The policy requires an estimate to be prepared by the construction manager prior to a change order being approved. This would help to identify the financial impact of any changes considered. We found five instances in the 30 change orders we tested in which these estimates were not done properly. Two of the estimates were not dated; and in three instances, there was no estimate prepared.

Recommendation 4.8
Colchester East Hants Health Authority should put a process in place to ensure all future change orders are compliant with their change order process.

4.101 *Measuring the size of the hospital* – The actual size of the hospital was not clearly understood by all parties. The architects informed us that the size of the facility was around 369,000 square feet but their cost consultants had calculated it at almost 386,000. We were informed this was likely due to different approaches to the calculation. Management indicated they were not concerned with these differences, as they were aware of the reasons behind them and the overall size of the building was no longer used for cost estimates.

4.102 In February 2011, CEHHA management asked the architects to review their calculations, this time using the Canadian Standards Association's standard for measuring a health care facility. The architect concluded that the actual size of the building is approximately 384,000 square feet. Management noted the actual size of the facility does not impact the costs at this point, as the structure has been built and any costs are based on the actual work done by contractors.

4.103 While we acknowledge the size of the finished building is not impacting specific costs now that estimates are no longer used, there are other possible impacts, both to past and future costs. Looking back, perhaps part of the explanation for the mechanical and electrical tender being so far over the pre-tender estimates is that the hospital was larger than expected. Looking to the future, the cost to maintain and operate the facility will be impacted by an increased floor area.

4.104 Regardless of any specific impacts of not knowing the size of the building, Health and CEHHA should have ensured all parties agreed at the start of the project on how the facility would be measured. Measurement should have been consistent with the Canadian Standards Association's standards for health care facilities.

Recommendation 4.9
The Department of Health and Wellness should put a process in place to ensure future construction projects have an agreement on how the size of the facility will be measured.

4.105 *Lack of estimates* – As discussed earlier, large construction projects are generally estimated at 30%, 60% and 90% of drawing completion. However CEHHA did not complete these estimates during the design process. The last estimate prior to the final design was completed based on schematic design documents which supported the second OIC request. Once that budget was approved and the architects began work on the detailed drawings, no estimates were prepared until tenders were ready to be issued. At that stage, pre-tender estimates were prepared to assess whether the response to the tender request was likely to fall within budget.

4.106 CEHHA management indicated they did not complete these estimates because their use of a fast track approach made it impossible. The fast track approach to designing and procuring the hospital means the project moves forward as each step is ready, rather than completing all plans and designs before construction starts. This meant CEHHA did not have fully complete drawings prior to starting construction. Instead, tenders were issued for various parts of the project as the drawings were ready. They believe following a 30%, 60%, 90% approach would have required them to complete too many estimates during the design process, as they would have to apply this to each tender package as it was prepared.

4.107 We do not accept this argument and feel at a minimum CEHHA should have identified the more significant tender packages, such as the mechanical and electrical package, and ensured appropriate estimates were prepared during the design stage. The budget for mechanical and electrical was originally $45.3 million; the lowest tenders were more than $73 million. Given the significant differences in the quality and quantity of information available at the schematic design stage (conceptual drawings only, no details) and the pre-tender stage, we feel it would have been appropriate for CEHHA to ensure they were actively monitoring the progress of the design to ensure it stayed within the approved budget.

4.108 A significant amount of work took place between the two estimates CEHHA completed. For example, a number of new plumbing and heating or ventilation requirements were identified between the two estimates. While management were aware of these changes, they were not included in the pre-tender estimate. Failure to identify mechanical and electrical changes contributed to project delays.

4.109 Management believes that more frequent estimates would not have made a difference because they believe the estimates would likely have had the same errors. While it is possible 30%, 60%, and 90% estimates may not have been any more accurate than the pre-tender estimates, it is reasonable to expect this would have increased the likelihood of these changes being identified earlier.

4.110 The extent to which this weak oversight contributed to the problems occurring on this project is impossible to say. It is clear, however, that this represents another instance of poor control and a lack of monitoring of the costs of the project.

Recommendation 4.10
The Department of Health and Wellness should require the completion of 30%, 60%, and 90% estimates during the design stage of future construction projects, including significant trade packages for fast track projects.

Other Concerns

Conclusions and summary of observations

The lack of construction expertise at CEHHA and Health has had a significant impact on the ability to manage and control this project. CEHHA management did not adequately review and challenge the work of various consultants whom they hired to assist with the project. Even without construction expertise, management should have tried to obtain a better understanding of the rationale for significant estimates proposed by consultants. Existing government expertise should be used to manage large construction projects in the future.

4.111 *Lack of construction expertise* – Management and staff at CEHHA are responsible for running the health district. Their expertise is almost exclusively health-care focused. While CEHHA did hire a staff member with extensive hospital construction experience to oversee this project, this position was relatively low in the organization's hierarchy. Those with ultimate decision-making authority, including Board members, did not have sufficient expertise in large construction projects to provide appropriate oversight. While the Departments of Transportation and Infrastructure Renewal, and Health and Wellness were represented on the planning committee, these representatives were non-voting members. The Department of Transportation and Infrastructure Renewal representative told us his role on this project was very limited.

4.112 While CEHHA hired numerous consultants and experts to work on their behalf, management's review and challenge of their consultant's work should have been more rigorous. They did not ask the questions needed to gain a better understanding of some very significant issues, such as the cost per square foot and grossing factor estimates used to estimate building size.

4.113 *Department of Health and Wellness* – Health management told us they had only one staff member responsible for capital construction projects when

this project was planned. Since that time Health has increased staffing within its capital infrastructure group to six engineers.

4.114 Due to this lack of expertise, in April 2007, Health hired an external firm to act as their project manager for this assignment. Health did not have a signed contract with this consultant at the time we completed fieldwork in early 2011. There was no formal reporting structure in place. Health management informed us they receive verbal or email updates on a bi-weekly basis or as required. They were able to provide examples of email correspondence from the consultant. However we would expect a more formal arrangement to ensure Health outlines the information they require and to clarify the consultant's role.

Recommendation 4.11
The Department of Health and Wellness should sign a contract including clear responsibilities and reporting requirements with its project manager for the Colchester Hospital replacement project.

4.115 Health management acknowledge that the role they expect their consultant to fill is one they now have staff perform internally. At the time the consultant was hired, they did not have adequate resources to fulfill this role from within the Department. Management currently feel that consistency on the project is of such significance that replacing their project manager with someone from inside Health is not an appropriate approach. Accordingly, the consultant continues to represent Health on the project.

4.116 In April 2007, Health hired a second external firm to review the detailed plans and identify areas of potential savings. The external firm provided an extensive report noting potential cost savings, as well as indicating where space was not sufficient. Health has not done any analysis to show whether these identified cost savings were achieved.

4.117 *Existing government expertise* – We interviewed a senior management member at the Department of Transportation and Infrastructure Renewal (TIR) to determine that Department's role in this project. He indicated TIR was involved on a limited basis. One member of TIR was part of the planning committee and was involved in the selection process for some of the key consultants on the assignment. Beyond that TIR was not asked for any detailed analysis and was never asked to review the facility designs.

4.118 In the past, TIR was responsible for constructing all public buildings, including hospitals, in Nova Scotia. The Department has not been involved in hospital construction for over 20 years. However, TIR are still involved in construction of schools, court houses and other buildings. We were informed that TIR would not have sufficient staffing at this time to take

on full responsibility for all projects, including health care facilities, but would have the construction expertise required to do so.

4.119 We believe a central government organization should be responsible for all large construction projects; the Department of Transportation and Infrastructure Renewal is one possibility. This could be accomplished using provincial government employees or by contracting with consultants. In either instance, staff at a central organization should have the appropriate expertise to either oversee projects themselves or to know what questions should be asked of external consultants.

4.120 While we acknowledge a central body may not have completely dealt with the challenges faced on this project, we believe internal expertise would make it much easier for government to work with the construction industry. Instead of health experts trying to negotiate with architects and engineers, the province should be represented by individuals with an extensive understanding of the construction market.

4.121 When projects are managed centrally, it is important that the needs of the project stakeholders still be considered. While a central body would have the necessary construction expertise, it would not have experts in all fields. Whether the end users for a project are in healthcare or any other field, input from stakeholders and ongoing involvement in projects will be necessary to ensure the right building is constructed to meet identified needs.

Recommendation 4.12
Treasury Board should assign responsibility for construction projects in Nova Scotia to a central organization with the necessary expertise to oversee all significant construction projects for all government departments in Nova Scotia.

Procurement

Conclusions and summary of observations

We found the overall procurement approach used by CEHHA to be appropriate and adequately supported, finding only minor deficiencies in the process followed. We also tested procurements at Health related to the project and identified minor improvements.

4.122 *CEHHA* – CEHHA issued and awarded RFPs and tenders appropriately; however we identified minor deficiencies in nine of 20 procurement files we tested. Certain files had more than one issue.

- Two files lacked a pre-tender estimate.
- Four files were not date stamped to show when they were received.
- Five files had issues with documentation not being complete, but overall evidence suggests process was followed.

4.123 *Department of Health and Wellness* – Health had two procurements related to this project. The consultant who was to act as the Department's project manager was hired from government's standing offer. While this is an acceptable approach, as reported earlier in this Chapter, Health failed to ensure there was a signed contract with this consultant.

4.124 An external firm with health care facility planning expertise was hired through an alternative procurement process. The process followed for this procurement was acceptable, although issues exist with the appropriateness of the support for some claims made by this consultant. Part of the contract with this firm allowed for reimbursement of reasonable expenses but claims for these expenses have not been consistently supported by adequate evidence.

Summary Comments

4.125 In this Chapter, we have identified certain problems with the process followed to build the new Colchester Regional Hospital. We have made recommendations to improve the process for future large construction projects.

4.126 Another important step on any large project involves examining the lessons learned after the project is complete. A lessons learned or post-occupancy exercise can provide useful information on what worked versus what should be done differently for future projects. It also provides an opportunity to assess how decisions made during construction impact the operation of the building. In this instance, a post-occupancy assessment should be conducted after the new hospital has opened.

4.127 Earlier in this Chapter, we noted the need for a central body to oversee large construction projects. This central body should ensure a post-occupancy assessment is completed for the new Colchester Regional Hospital as well as all future large construction projects.

Recommendation 4.13
Colchester East Hants Health Authority should conduct a post-occupancy assessment after the new hospital opens to identify lessons learned for future capital projects. The results of this assessment should be shared with the Department of Health and Wellness and central government so that the lessons learned can benefit future projects.

Recommendation 4.14
Following the establishment of a central body to oversee large construction projects, Treasury Board should assign responsibility for post-occupancy assessment of large construction projects to this group.

Response: Colchester East Hants Health Authority

We thank the Auditor General and his staff for their work on this audit and appreciate the respectful manner with which his staff conducted the audit in this District.

With regard to the findings and conclusions identified by the Auditor General and his staff we wish to provide the following comments:

For 10 years our team has been devoted to building a new health centre to serve our communities. Since day one our goal has been to plan and deliver a facility that would allow us to offer safe quality care; a supportive workplace for our healthcare team and that would support health and healing. We believe that the facility that has been designed and is being constructed for our community will allow us to accomplish those objectives. Being diligent about our planning, oversight and spending was also equally important to us.

A complex project like ours was new territory for us all and so we began by seeking out the resources and supports available to assist us. We researched other health care construction projects, and at various stages of our initiative compared our projected costs with those projects as a means of informing us and supporting decisions. In addition, we became familiar with the Department of Health's own capital project manual and put structures and processes in place to guide our project based in part on their recommendations. Our role and responsibility for this project was understood and defined by our organization during the early stages of this initiative – we established a governance function to oversee the project scope, budget and timeline; contracts with project consultants were detailed with respect to roles and responsibilities; and position descriptions for project staff were clear with respect to roles and responsibilities.

We made sure those in government with experience and knowledge of capital projects were part of our planning committee and where we lacked experience and expertise, we relied on consultants with proven track records to advise us. With these resources in place we asked questions of what was presented to us by our consultants and sought evidence, options and details to support our decisions.

Despite all these preparations, measures and the countless hours our volunteers and staff have dedicated to the project, there have been many challenges to overcome, including rising costs related to construction supplies and labour. We welcomed the Auditor General's review of our project and any lessons that could be applied to our project or future initiatives, but are very discouraged by the findings that suggest a lack of diligence on our part. We wish to emphasize that budget adjustments on this project were requested as a result of two primary factors. First, the original budget did not include any adjustment for inflation and therefore was not adequate, from the beginning of the project, to build the

hospital. This was known by all parties involved. Second, the noted increase in the cost of construction for Mechanical and Electrical trade packages could not have been predicted and was too substantial to mitigate. It should also be noted that prior to proceeding to tender for Mechanical and Electrical work, the project was under budget. The Health Authority, at no time, proceeded with a contract award without agreement from the Province and without assurance that the project funds were adequate to complete the work. We believe that this demonstrates that we were concerned about the cost of the project and were making all efforts to manage those costs.

We will begin to address the issues identified within this report and ensure that we continue to effectively manage the project budget, as well as ensure that we deliver the facility that was committed to our community. We are proud of the fact that our new health centre will open next year and are fully committed to applying these findings to the ongoing management of our project as we work toward this important day for our communities and health care team.

With regard to recommendations directed toward the Districts:

Recommendation 4.2
The Department of Health and Wellness and Colchester East Hants Health Authority should prepare a comprehensive assessment of the funding required to operate the new facility at its intended capacity and agree on the level of funding to be provided.

4.2 Response
CEHHA agrees with this recommendation. With the decision now made on the mechanical/electrical systems being used in the facility, CEHHA is in the process of preparing an updated facility operating cost projection. In addition, CEHHA has initiated the process of developing program impact documents for consideration by the Department of Health and Wellness – for the program areas where growth/change is expected in the new facility. This is as per normal business planning process and is tied to the fiscal year in which the facility will be opened and operated.

Recommendation 4.8
Colchester East Hants Health Authority should put a process in place to ensure all future change orders are compliant with their change order process.

4.8 Response
CEHHA agrees with this recommendation. Currently, all change order documentation is reviewed by the construction manager, architect & project manager prior to issuance to CEHHA/DOH for their approval. A detailed review and approval does take place for all contract changes upon receipt of trade pricing

and prior to approval of change orders by CEHHA/DOH as noted above. This process will continue.

Construction Management estimates will continue to be completed for all discretionary changes to ensure there is appropriate benefit for the cost of the change.

CEHHA will all review and if necessary adjust its Change Order policy to ensure that it is appropriate for a project of this nature.

RESPONSE: COLCHESTER EAST HANTS HEALTH AUTHORITY

Recommendation 4.13
Colchester East Hants Health Authority should conduct a post-occupancy assessment after the new hospital opens to identify lessons learned for future capital projects. The results of this assessment should be shared with the Department of Health and Wellness and central government so that the lessons learned can benefit future projects.

4.13 Response
CEHHA recommended that this process be completed during our meeting with the Auditor General's staff as part of this review. CEHHA has established a process for completing a post occupancy evaluation and utilized the framework for two projects to date. It has always been CEHHA's intent to complete an evaluation of the project after occupying the new facility.

Response: Treasury Board

Recommendation 4.12
Treasury Board should assign responsibility for construction projects in Nova Scotia to a central organization with the necessary expertise to oversee all significant construction projects for all government departments in Nova Scotia.

The Treasury Board Office agrees that significant construction projects must have the appropriate level of central governance for oversight and must also have appropriate monitoring and reporting controls in place to enable the governance process. The Treasury Board Office has the following initiatives underway and processes in place to enable strong capital project governance throughout the project lifecycle:

The Tangible Capital Asset (TCA) Prioritization Committee

There is a committee in place, comprised of key representatives from across government, with a specific skill set, that evaluates and prioritizes proposed capital projects. Among others, the objectives of this committee, in evaluating proposed projects, are to ensure that the proposals:

- Include an appropriate level of detail with respect to planning and scope;
- Include cost estimates that are accurate and reasonable given the detailed planning

The role of the Committee has been evolving as the government continues to move toward a standardized and enhanced capital budgeting and management process. Treasury Board Office will look at further enhancing the work of the Committee to include the implementation of a benefits realization and post-project review process for larger capital projects. This process will evaluate whether the project has achieved its expected objectives. A post-project review process will not only help to determine project success and sustainable benefit, but will also provide the opportunity to identify, track and communicate project "lessons learned". This will provide valuable information to help ensure the success of future significant capital projects.

Consolidation of Building, Design, Construction Activities

The Treasury Board Office has begun a process to evaluate opportunities for shared services in Nova Scotia. These opportunities will include functional areas of government where standardization of processes and systems can occur and result in improved service, increased effectiveness and efficiencies.

RESPONSE:
TREASURY BOARD

Building design, construction, project management and asset management have been identified as having significant potential for standardization and consolidation which will provide greater control over the processes, policies and practices. This will help to ensure a consistent and effective approach in both large and small scale infrastructure planning, scoping, development, and ongoing maintenance. We are currently evaluating these areas and will further investigate the feasibility of consolidating design and construction responsibilities into a single organization to build both the capacity and knowledge within the public sector to better serve the province as a whole. This will also lead to the development of common standards for the procurement of design and project management services externally.

Contract Management Framework

In addition to the above initiatives, a new and comprehensive Contract Management Framework, which will direct and oversee the development and management of all future government contract initiatives, has been approved by Treasury Board and became effective April 1, 2011. The Framework employs best-practices for all stages of the contract management life-cycle and ensures a detailed review, by an expert advisory group, of all non-labour government contract initiatives with estimated annual costs of $1 million or more. This review will take place at various stages of a contract initiative's planning and development.

The Framework's best contract management practices and contract initiative review process are intended to result in the better management of contract risk, the reduced likelihood of contract failure and the improvement of contract quality.

Recommendation 4.14
Following the establishment of a central body to oversee large construction projects, Treasury Board should assign responsibility for post-occupancy assessment of large construction projects to this group.

The Treasury Board Office also recognizes the importance of a post-project review whereby lessons learned can be identified and recorded, and, most importantly leveraged for future projects. This responsibility has been included in the stated objectives of the TCA Prioritization Committee.

Please see the response under 4.12 which refers to the TCA Prioritization Committee and its responsibility for post-project review.

Response: Department of Health and Wellness

Recommendation 4.1
The Department of Health and Wellness should establish a schedule to review the preliminary budget and approve the final project totals for future capital projects.

Agreed. The Department of Health and Wellness will work within government to develop the process.

Recommendation 4.2
Department of Health and Wellness and Colchester East Hants Health Authority should prepare a comprehensive assessment of the funding required to operate the new facility at its intended capacity and agree on the level of funding to be provided.

Agreed. The new hospital is designed as a replacement facility. As a result the reuse of existing furniture and equipment from the current hospital, to the extent possible, is good fiscal management. In addition $1.6 million dollars were included in the operations budget to cover the increased plant footprint. Demolition costs were not considered part of the overall project costs and will be considered once the future of the existing facility is decided.

Recommendation 4.3
Department of Health and Wellness should put a process in place to ensure only complete and accurate information is presented to Cabinet.

Agreed. Submissions to Cabinet are managed through the Policy and Planning Division. Many levels of review take place from the originator of the document to the Chief Financial Officer, the Deputy Minister and the Minister. Financial staff are an integral part of the document development and review to ensure complete and accurate financial information is presented.

Recommendation 4.4
The Department of Health and Wellness should put a process in place to ensure management in charge of significant capital projects complete an adequate review and challenge of key estimates prepared by consultants.

Agreed. The Department now has a robust Infrastructure Management group comprised of six engineers. During the start of the Colchester project there was one engineer.

RESPONSE: DEPARTMENT OF HEALTH AND WELLNESS

Recommendation 4.5
The Department of Health and Wellness should put a process in place to require regular reviews of grossing factor estimates at significant stages of large construction projects.

Agreed: The Department of Health & Wellness will require regular reviews of grossing factors of all large construction projects.

Recommendation 4.6
The Department of Health and Wellness should put a process in place to ensure design decisions are made with due consideration of the impact on costs for future construction projects.

Agreed. The Department now has a robust Infrastructure Management group comprised of six engineers. During the start of the Colchester project there was one engineer. There is also a financial advisor dedicated to the capital budget.

Recommendation 4.7
The Department of Health and Wellness should put a process in place to ensure decisions to seek LEED certification for construction projects are supported by analysis of the costs. Costs should then be tracked over the life of the project.

This project was approved and designed before the requirement for LEED certification. LEED compliant facilities are now the practice for new construction within all Government Departments.

Recommendation 4.8
Colchester East Hants Health Authority should put a process in place to ensure all future change orders are compliant with their change order process.

Agreed

Recomendation 4.9
The Department of Health and Wellness should put a process in place to ensure future construction projects have an agreement on how the size of the facility will be measured.

Agreed. This is currently in place.

Recommendation 4.10
The Department of Health and Wellness should require the completion of 30%, 60% and 90% estimates during the design stage of future construction projects, including significant trade packages for fast track projects.

Agreed. While the practice of 30, 60, and 90% estimates is restricted to lump sum contracts which are seldom currently used on the construction of large facilities The Department of Health and Wellness agree that an increased frequency of estimates by multiple sources will be used on future construction management projects of significant size.

Recommendation 4.11
The Department of Health and Wellness should sign a contract including clear responsibilities and reporting requirements with its project manager for the Colchester Hospital replacement project.

RESPONSE: DEPARTMENT OF HEALTH AND WELLNESS

Agreed. Legal is currently drafting the contract.

Recommendation 4.12
Treasury Board should assign responsibility for construction projects in Nova Scotia to a central organization with the necessary expertise to oversee all significant construction projects for all government departments in Nova Scotia.

This recommendation is for Treasury Board, however, an MOU between the Department of Health and Wellness and the Department of Transportation and Infrastructure Renewal is in the final review stage.

Recommendation 4.13
Colchester East Hants Health Authority should conduct a post-occupancy assessment after the new hospital opens to identify lessons learned for future capital projects. The results of this assessment should be shared with the Department of Health and Wellness and central government so that the lessons learned can benefit future projects.

Agreed

Recommendation 4.14
Following the establishment of a central body to oversee large construction projects, Treasury Board should assign responsibility for post-occupancy assessment of large construction projects to this group.

Again, this is a recommendation for Treasury Board to provide comments, however, an MOU between the Department of Health and Wellness and the Department of Transportation and Infrastructure Renewal is in the final review stage.