
4 Health and Wellness: Hospital System Capital Planning

Summary

If funding stays at recent levels and available money is allocated as it currently is, Nova Scotia's hospital system cannot be adequately maintained and will continue to deteriorate. Currently, significant deficiencies often continue due to lack of funding. Opportunities for ongoing cost savings are not given adequate consideration and the extent to which significant equipment or facilities are used is not a significant factor in funding decisions. A new approach to capital planning for the hospital system is needed which better utilizes scarce monetary resources.

Only a small portion of infrastructure and equipment requests are funded each year. The Department of Health and Wellness estimates more than \$600 million will be needed in the next ten years for the most basic infrastructure needs in order to maintain the system as it now exists. While preventative maintenance can reduce repair costs in the long run, it is not always carried out. This is often due to lack of funding. Many of the funding requests each year relate to aging equipment; only a portion of these requests are funded in any given year.

Despite the challenging financial situation facing the hospital system, Health and Wellness is not fully exploring areas which could generate operational cost savings. Capital projects which would result in a net reduction in costs do not get appropriate consideration because they cannot be covered through available annual funding and district health authorities can only incur debt under the Health Authorities Act with Governor-in-Council approval. Improvements to infrastructure may also be possible through energy performance contracts with private sector companies. These contracts do not require up-front investment by the public sector entity and can lead to long-term operational cost savings by improving energy efficiency. Initially these cost savings are used to cover the contracted upgrades; once the contract has been paid, the entity realizes ongoing cost savings. We recommended the Department examine the risks and rewards of energy savings contracts.

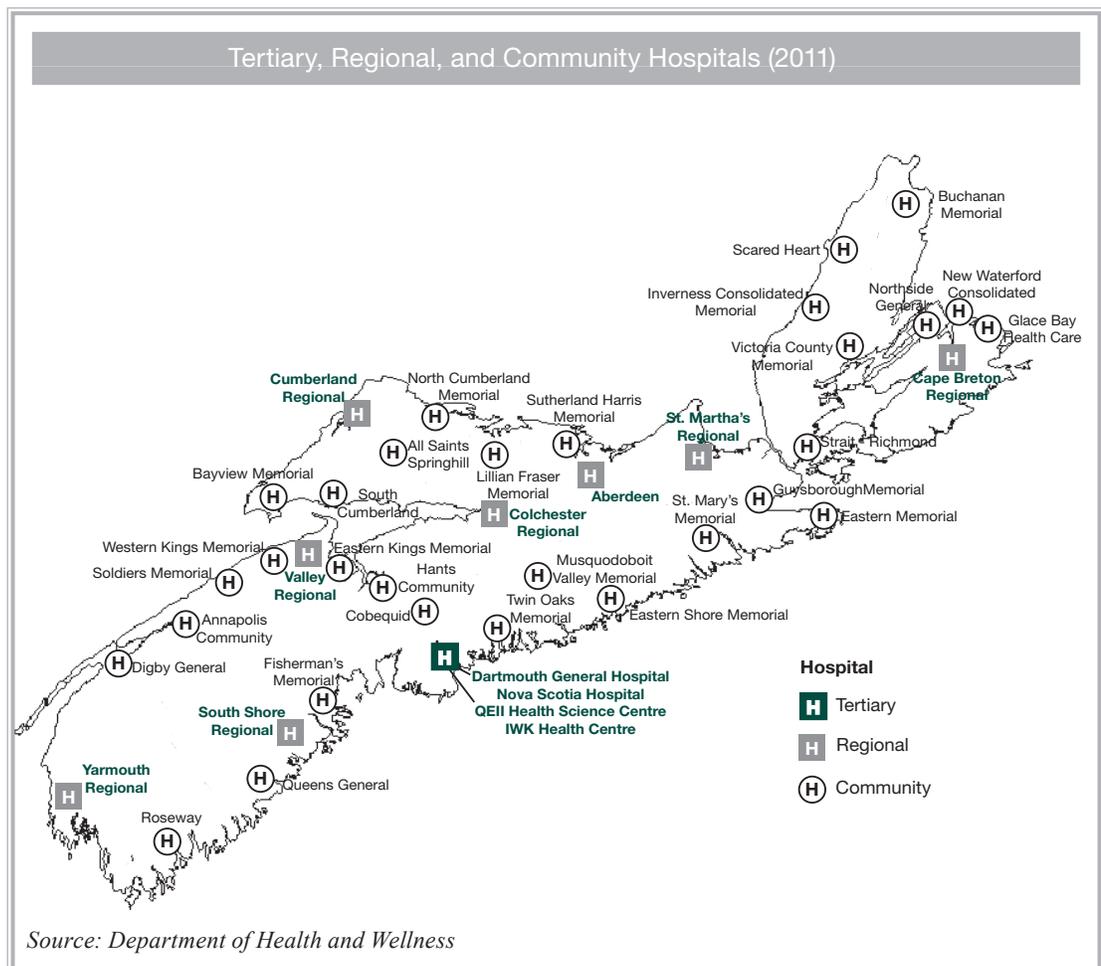
The Department of Health and Wellness has little information regarding the extent to which significant equipment or hospital facilities are used. In times of limited funding, utilization data could assist the Department and districts in making both operating and capital planning decisions, such as where equipment and services should be located and whether to replace existing infrastructure and equipment as it ages. We recommended the Department begin to collect utilization data and consider it in capital planning decisions.

Substantive changes are needed to the Department of Health and Wellness' capital planning processes to make better use of available funding and take advantage of opportunities for operational cost savings. Given the province's fiscal situation, the solution is not simply more funding. Implementing the recommendations in this chapter will represent a significant step towards improved capital planning for hospitals.

4 Health and Wellness: Hospital System Capital Planning

Background

- 4.1 Hospitals in Nova Scotia are administered by nine district health authorities and the IWK Health Centre. For purposes of this report, the phrase district health authorities includes the IWK.
- 4.2 The district health authorities are established and governed by the Health Authorities Act. They operate 42 hospitals across the province (see exhibit below), and are responsible for providing care to all Nova Scotians. The Department of Health and Wellness is responsible for most of the funding, as well as overall direction and oversight of the hospital system.





- 4.3 District health authorities request capital funding from the Department of Health and Wellness through the annual business planning process. Capital funding is provided through a variety of funding envelopes, primarily infrastructure (divided between small and large projects) and medical equipment. District health authorities cannot borrow to finance capital projects because the Health Authorities Act does not allow authorities to incur debt without Governor-in-Council approval.
- 4.4 In addition to provincial funding, district health authorities generally receive funding from local hospital foundations and auxiliaries. Provincial funding often covers 75% of expected project costs with the remaining 25% to be provided by the local area for all projects except smaller infrastructure repair and renewal work. Foundations and auxiliaries assist district health authorities with funding projects which receive provincial funds as well as other projects. Districts work with their foundations and auxiliaries to determine where this additional funding is spent.
- 4.5 Each year, district health authorities only receive funding for a small percentage of their total capital requirements. Nova Scotia is not the only province to face this problem. Lack of sufficient funding to maintain the hospital system's capital stock is a common theme across many jurisdictions.
- 4.6 The cost of healthcare is expected to face a continual rise, with constant pressure on budgets resulting in an ongoing need to carefully manage spending. District health authorities are responsible for all maintenance of existing infrastructure and equipment. Traditionally, this is an area in which budget cuts have a significant impact. Deferred maintenance is a common theme across many jurisdictions, despite the understanding that failing to maintain capital stock will have significant negative impacts in the long term.

Audit Objectives and Scope

- 4.7 In September 2012, we completed a performance audit of capital planning and asset management activities in the hospital system. We chose to focus our work on hospital infrastructure and medical equipment. We audited the Department of Health and Wellness, and three health authorities – Capital Health, South Shore Health, and Guysborough Antigonish Strait Health Authority. We wanted to determine whether capital planning is adequate to maintain the hospital system's capital stock and address the greatest needs on a provincial basis. We also wanted to assess whether the level of asset maintenance is sufficient to ensure hospital capital stock does not deteriorate.
- 4.8 The audit was conducted in accordance with Sections 18 and 21 of the Auditor General Act and auditing standards established by the Canadian Institute of Chartered Accountants.



- 4.9 The objectives of the audit were to assess whether:
- capital planning systems and processes are adequate to appropriately allocate capital resources within and among district health authorities;
 - capital planning processes are adequate to maintain the hospital system's capital stock;
 - health authority records adequately track the age, condition and maintenance of assets; and
 - health authority asset maintenance processes are adequate to ensure patient safety and operational objectives are met.
- 4.10 Certain audit criteria for this engagement were adapted from Accreditation Canada's Qmentum Standards; most were developed by our Office. The audit objectives and criteria were discussed with, and accepted as appropriate by, senior management at Capital Health, South Shore Health, Guysborough Antigonish Strait Health Authority, and the Department of Health and Wellness.
- 4.11 Our audit approach included examination of policies, documents and reports, interviews with staff and management, and testing compliance with policies and processes. The audit period covered April 2010 to March 2012.

Significant Audit Observations

- 4.12 This chapter refers to long-term capital planning. As in any organization, district health authorities and the Department of Health and Wellness must consider strategic planning for the future; this includes long-range planning for capital requirements. While we acknowledge that government prepares budgets on an annual basis, we believe long-term capital planning is still needed. This should include multi-year plans outlining the projects expected to be addressed in each year. Plans would be revisited annually as the Department and district health authorities consider how capital assets will be replaced, and would address possible alternatives if available funding cannot cover all projects intended for the current year.

Capital Planning by the Department

Conclusions and summary of observations

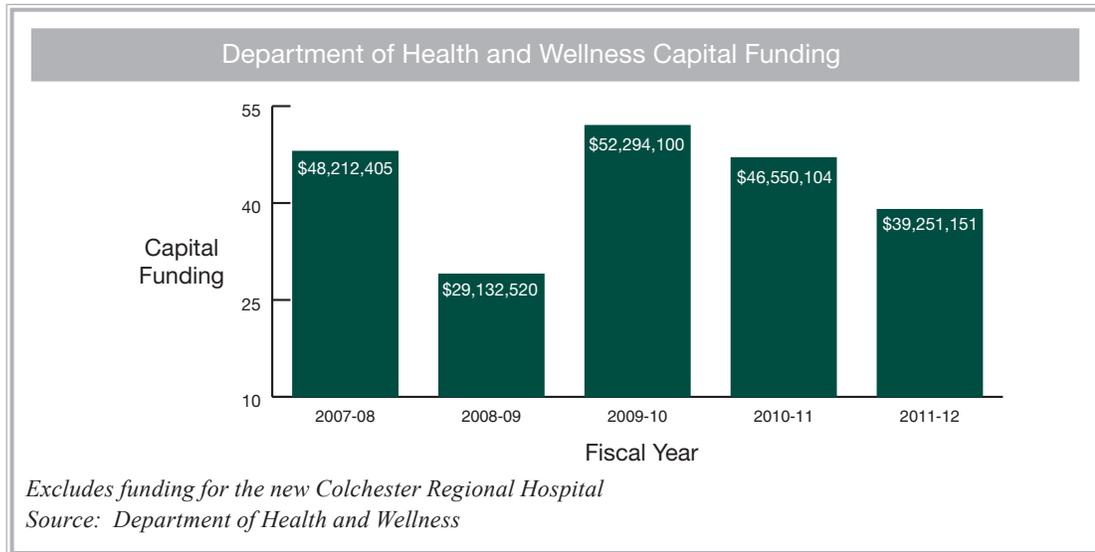
If funding is maintained at recent levels, the province cannot continue to cover equipment and infrastructure repair and replacement needs. The funding estimated for basic infrastructure repair and renewal over the coming decade will cost far more than traditional funding amounts can cover. These estimates do not include the cost of all infrastructure or



medical equipment, or costs for any new facilities. There is no province-wide, long-term capital planning for the hospital system. Consistent with that approach, funding is provided on an annual basis and levels have fluctuated over the past five years. The Department is not fully exploring areas which could generate operational cost savings, such as energy performance contracts and projects which would reduce annual operating costs. In addition, there is no tracking of the extent to which equipment and buildings are used. This information could be useful in making capital spending decisions. We recommended the Department implement multi-year capital planning. We also recommended the Department consider system-wide utilization patterns for facilities and significant equipment.

- 4.13 *Overall process* – The Health Authorities Act requires all district health authorities to submit an annual business plan to the Department of Health and Wellness, including capital expenditure priorities for the following fiscal year. For the 2012-13 budget year, the Department asked districts to submit their top-ten capital equipment requests and all infrastructure requests separate from their business plan since capital projects go through a separate approval process.
- 4.14 The Department of Health and Wellness’ funding for capital projects is determined by Treasury Board as part of the provincial budget process. District health authorities may receive additional funding from their foundations and auxiliaries. Traditionally, Health and Wellness has required each district health authority to cover 25% of the cost of approved projects; these funds often come from local sources such as foundations, auxiliaries, or other fundraising efforts.
- 4.15 The Department’s approval processes for equipment and infrastructure requests vary depending on the type and dollar value of the project. These are discussed in greater detail later in this chapter. The Infrastructure and Equipment Stewardship Committee provides oversight for all hospital system capital matters. All capital projects greater than \$1 million require Order-in-Council approval, regardless of the nature of the request.
- 4.16 *No long-term planning* – The Department of Health and Wellness does not have long-term capital plans for the hospital system. All funding is completed on a year-by-year basis. In many cases, the Department requires projects to be completed within the current budget year or the project may not be funded.
- 4.17 In addition to the challenges of trying to plan capital projects under a single-year funding approach, capital funding has also varied from year to year. The 2011-12 provincial budget did not include any capital funding for the hospital system. During the year, a small number of elevator and fire safety projects were completed and other projects were funded through emergency funding. Fluctuations and situations in which there is very little funding available cause further challenges for the district health authorities as they try to plan for the future.

4.18 The exhibit below shows capital funding over the past five years and illustrates the variation from year to year.



4.19 We recognize that under the province’s budget system, Health and Wellness does not ultimately control the amount of funding it receives each year. While this can lead to challenges in developing multi-year capital plans, we noted that Transportation and Infrastructure Renewal has five-year plans for the highway system. While we did not audit those plans, we highlight this as an example where longer-term plans are currently used in government.

Recommendation 4.1

The Department of Health and Wellness should implement multi-year capital planning for the hospital system.

Department of Health and Wellness Response:

DHW agrees with this recommendation and the need for multi-year capital planning. DHW has begun to develop processes for the implementation of multi-year plans and will continue to explore options for the completion of a provincial plan for clinical services which is a key component of multi-year capital planning. A multi-year capital planning process will be in place by Mar 31, 2014.

4.20 *Asset utilization* – Health and Wellness does not track facility or medical equipment utilization patterns throughout the province. The Department does have some basic utilization data on the services available at each hospital but this is not used in any meaningful way to assess the needs of the province’s hospital system. Beyond anecdotal information on large equipment items, Health and Wellness does not have adequate, up-to-date information regarding where equipment is located or how it is utilized throughout the province.

4.21 Utilization data can assist with decision-making by providing information regarding which facilities or pieces of equipment are not being used near their capacity. In



times of limited funding, this could assist the Department and districts in making both operating and capital planning decisions, such as where equipment and services should be located and whether to replace existing infrastructure and equipment as it ages. There are many difficult decisions to be made regarding the hospital system. Funding allocations must consider system-wide needs; utilization data can be key to ensuring decisions are based on the best available information.

Recommendation 4.2

The Department of Health and Wellness should collect utilization data for major medical equipment and hospital infrastructure.

Department of Health and Wellness Response:

DHW agrees with this recommendation and the need to have utilization data for major medical equipment and hospital infrastructure. DHW will strengthen current processes to compile utilization data for major medical equipment and hospital infrastructure. The process will be in place and information collected by Mar 31, 2014.

Recommendation 4.3

The Department of Health and Wellness should consider utilization data when making funding allocation decisions.

Department of Health and Wellness Response:

DHW agrees with this recommendation and the need for greater consideration of utilization data when making funding allocation decisions. DHW will review and revise decision-making processes to incorporate utilization data. Although important, utilization data is one of many criteria used in DHW decision-making processes. DHW will continue to explore options for the completion of a provincial plan for clinical services which is a key component of the process to consider utilization data when making funding allocation decisions. The revised process will be in place by Sept 30, 2014.

4.22 *Annual capital planning at the Department* – Equipment and infrastructure funding requests are reviewed by various committees or groups at the Department of Health and Wellness.

- Infrastructure Repair and Renewal Committee: capital repair and renewal project requests under \$90,000
- Infrastructure Management Repair and Renewal Committee: projects between \$90,000 and \$1 million
- Equipment group: all equipment requests

4.23 These committees and groups make recommendations to the Department's Infrastructure and Equipment Committee which provides oversight of hospital system capital funding decisions. The Infrastructure and Equipment Committee determines which projects are funded each year, subject to final approval by the deputy minister.

- 4.24 *Infrastructure Repair and Renewal Committee* – The Infrastructure Repair and Renewal Committee includes five members of Health and Wellness’ infrastructure group and one representative from each district health authority. The Committee develops funding criteria to assess projects. Each district health authority submits its list of priority projects with supporting explanations to the Committee. The Committee discusses each project and assigns a score; these scores determine the province-wide priorities.
- 4.25 This collaborative approach which includes district health authorities and the Department helps ensure a better understanding of funding decisions while still retaining overall funding authority at Health and Wellness through the Infrastructure and Equipment Committee and deputy minister.
- 4.26 *Infrastructure Management Repair and Renewal Committee* – The Infrastructure Management Repair and Renewal Committee is comprised of five members of the infrastructure group at Health and Wellness. While the scoring criteria used are shared with district health authorities, the districts play no role in developing the criteria or assessing funding requests. The Committee reviews and ranks each submission, creating a province-wide priority list for projects between \$90,000 and \$1 million. We understand district health authority involvement in the Infrastructure Repair and Renewal Committee has been a positive step. By not involving districts in the Infrastructure Management Repair and Renewal Committee, the Department is missing an opportunity to create better buy-in and understanding of the funding allocation process.

Recommendation 4.4

The Department of Health and Wellness should include representation from all district health authorities and the IWK Health Centre on the Infrastructure Management Repair and Renewal Committee.

Department of Health and Wellness Response:

DHW agrees with this recommendation and the need for representation from all District Health Authorities and the IWK Health Centre. DHW will include representation from all District Health Authorities and the IWK Health Centre on the Infrastructure Management Repairs and Renewal Committee for Apr 1, 2013.

- 4.27 *Equipment* – The equipment group is comprised of staff from the Acute and Tertiary Care Branch at Health and Wellness, along with a representative from physician services. This group is responsible for assessing equipment requests and making funding recommendations.
- 4.28 We are concerned there is insufficient focus on equipment by the Department. The acute and tertiary care staff responsible for reviewing equipment funding submissions have significant additional responsibilities; equipment funding represents a small part of their jobs. Given these other responsibilities, it is difficult to see how the group has



the time and resources to monitor the status of medical equipment in the provincial hospital system. In contrast, infrastructure decisions are made by a group of seven staff members, primarily professional engineers, whose only focus is on maintaining the hospital system's infrastructure. The equipment area could benefit from having staff whose primary role relates to ongoing equipment issues and maintenance in the hospital system.

Recommendation 4.5

The Department of Health and Wellness should assign sufficient staff resources to review hospital system equipment funding requests.

Department of Health and Wellness Response:

DHW agrees with this recommendation and will assess the benefits of having staff members solely dedicated to hospital system equipment. DHW will complete the assessment by March 31, 2014. Any staffing changes based on this assessment will follow.

- 4.29 When discussing funding requests and equipment needs, the equipment group does not include staff from district health authorities. Scoring criteria used to rank projects are not shared with the district health authorities. As a result, each district has developed its own approach to prioritizing equipment needs. This lack of information regarding how the Department scores potential projects leads to significant variations between how districts rank their projects and how the Department's equipment group ranks projects. For example, only five district health authorities had their top-ranked project funded for 2012-13. The remaining districts' highest ranked projects were scored significantly lower by the Department. Of the top-ten priority projects submitted from one district, the fourth- and tenth-ranked items were funded.
- 4.30 The Department's failure to share its scoring criteria and approach with district health authorities prevents the districts from identifying needs which are consistent with provincial priorities for equipment funding. There may be items which should have been included on district priority lists which were excluded because the districts were not aware of the provincial direction. While the Department of Health and Wellness is responsible for determining system-wide priorities, such wide disparities between district health authority rankings and the Department's rankings should be addressed.

Recommendation 4.6

The Department of Health and Wellness should include the district health authorities and the IWK Health Centre in its criteria selection and scoring processes for equipment allocation.

Department of Health and Wellness Response:

DHW agrees with this recommendation and the need for representation from district health authorities and the IWK Health Centre in reviewing and revising criteria and scoring processes. DHW is currently working on expanding the Medical Capital

Equipment Committee to include representation from the district health authorities and the IWK Health Centre. The new committee will be in place by Apr 1, 2013.

- 4.31 *Overall scoring system* – Although the current system is an improvement over previous years in which the Department simply allocated funding by approving the same number of projects in each district, further changes are still needed. As noted below, the Department needs to examine its scoring system to minimize inconsistencies and ensure it adequately considers all risk areas.
- 4.32 *Criteria weighting* – The Department-led committees involved in allocating funds for equipment and infrastructure all use a statistical system (Pairwise) to score district health authority submissions. Each committee or group has developed its own scoring criteria based on what it considers as the most significant considerations for equipment or infrastructure funding. Criteria are compared against each other and ranked as being of equal importance, lesser importance, or more important. These rankings mean a criterion that is considered more important will contribute more to the final project score.
- 4.33 We identified multiple inconsistencies in how this system is applied. Criteria which have been determined to be of equal importance are not always scored consistently against the remaining criteria. This could lead to a project score which is different from what would be expected and undermines the objective approach the Department is attempting to use.

Recommendation 4.7

The Department of Health and Wellness should review its use of the Pairwise scoring system and ensure that criteria are weighted in a consistent and appropriate manner.

Department of Health and Wellness Response:

DHW agrees with this recommendation and the need to review its use of the Pairwise scoring system. DHW committees using the Pairwise scoring system will work together to resolve identified issues. The system is expected to be reviewed for Sept 30, 2013.

- 4.34 *Project scoring* – Once the criteria have been weighted, they are used to score each submission using a predetermined scoring approach. Both infrastructure committees and the equipment group have prepared tables outlining what to look for when scoring each project against the criteria.
- 4.35 Although criteria weighting needs to be examined, we did not identify any concerns or inconsistencies in how the two infrastructure committees scored projects.
- 4.36 We did have a number of concerns with the equipment group’s scoring approach and its application of that approach. The following exhibit provides an overview of that group’s criteria and scoring approach.



| Risk and Safety | | Status and Useful Life | Service and Patient Impacts | Efficiencies |
|------------------------|--|---|--|---|
| Scores | Risk to patients and/or staff | What is the current status of the equipment? | How will it impact patients and hospital operations? | How will this increase efficiencies? |
| 0 | No risk | Within useful life | No impact | No efficiencies |
| 2 | Potential risk | Nearing end of life | Community, small impact on wait time, service hours impact | Potential efficiencies (repairs, supplies/equipment, HR) |
| 4 | Does not meet standard; recommendation from external body | At end of life, service contract notice received ("new" request for standard) | County, moderate impact on wait time | Minimal efficiencies (repairs, supplies/equipment, HR) |
| 6 | Confirmed incident, no harm | Past end of life, service contract ended; some parts; some repairs | District, large impact on wait time; service at another facility | Moderate efficiencies (repairs, supplies/equipment, HR) |
| 8 | Instance of staff/patient harm | Past end of life, many repairs, borrowed parts | Large region; major impact on wait times, service not in DHA | Moderate efficiencies in multiple areas (repairs, supplies/equipment, HR) |
| 10 | Multiple instances of patient/staff harm, severe harm or death | Past end of life, no longer able to repair, no parts available | Province; wait time unacceptable; service no longer available | Large efficiencies (repairs, supplies/equipment, HR) |
| Assigned Weight | 0.417 | 0.083 | 0.333 | 0.167 |

- 4.37 The equipment group’s criteria consider risk and safety matters differently from the infrastructure funding committees. Rather than considering the potential for harm to patients or staff, the equipment group focuses on actual instances of harm to staff or a patient. The potential for harm does not result in a higher score under risk and safety.
- 4.38 During our audit, we reviewed a funding request to replace equipment which the district health authority had removed from service due to concerns with increased levels of radiation exposure to staff and patients. This request only scored four of a possible 10 points for risk because there were no specific instances of harm to patients or staff. Ultimately, the equipment was not funded because it did not score high enough in comparison to other requests. However if scoring was based on the potential for harm to staff and patients, this request would have scored higher and would have been funded based on the ranking of other projects that year.
- 4.39 For five of the 20 equipment sample items we tested, we found equipment scoring was not supported. Similar equipment was scored very differently with no support to indicate the rationale for varying scores. Department management were unable to explain the differences and in each case consistent scoring would have impacted the final funding decisions.

- 4.40 We also found an additional seven instances in which the final scoring did not appear consistent with the scoring matrix. In one situation, Department management assigned a higher risk score based on incidents of harm they said had likely occurred, although this was not suggested in the district health authority submission. We also identified situations in which equipment condition and efficiencies were not scored according to the established criteria. Management were unable to provide reasonable explanations for these differences as they do not keep any records of the rationale or discussions supporting final decisions. In many instances, these scoring inconsistencies impacted the final allocations of funding.
- 4.41 While a scoring system can help to bring consistency to evaluating equipment funding requests, the detailed criteria must be applied in a consistent manner. Otherwise, what appears to be an objective, supportable system becomes a mostly subjective approach, particularly when there is no evidence to support final decisions.

Recommendation 4.8

The Department of Health and Wellness should revise the scoring approach for its equipment group to ensure that final scoring is consistent with funding criteria.

Department of Health and Wellness Response:

DHW agrees with this recommendation and the need for more consistency in the scoring of funding criteria. DHW will continue to review and revise the scoring approach for the Medical Capital Equipment Committee on an annual basis. The Committee is expected to review and revise the scoring approach for Sept 30, 2013.

Recommendation 4.9

The Department of Health and Wellness should develop a process to ensure information to support equipment scores assigned during capital funding is adequately documented.

Department of Health and Wellness Response:

DHW agrees with this recommendation and the need for documentation to support equipment scores. DHW will have processes in place to strengthen documentation of decisions and supporting rationale by Jan 1, 2013.

- 4.42 *Department funding requests* – The Department asked each district health authority to submit its top-ten funding requests for equipment and a full list of infrastructure projects for 2012-13. While this is an improvement over funding requests in prior years in which only three equipment items were requested, it fails to consider the relative size and mix of services offered in each district.
- 4.43 Capital Health has more than 13,000 pieces of equipment spread over eight hospitals, including the province’s tertiary care site which has more than five buildings. Some of the smaller districts have only two or three hospitals while larger districts may have several facilities. Each district submits the same number of equipment requests,



regardless of how many pieces of equipment each district has in its facilities or on its priority lists. In order to adequately consider system-wide needs, it is reasonable to expect a larger number of projects should be submitted from larger districts.

Recommendation 4.10

The Department of Health and Wellness should examine its process for requesting equipment funding submissions to ensure it considers the relative size of each district and the mix of services offered.

Department of Health and Wellness Response:

DHW agrees with the recommendation and the need to consider the relative size and mix of services offered in each district. The population served along with impact on services are factors currently considered in the criteria. DHW will continue to explore options for the completion of a provincial plan for clinical services to guide future decisions regarding mix of services. DHW will continue to review and revise the process and criteria on an annual basis. The Committee is expected to review and revise the process by Sept 30, 2013.

- 4.44 *Consideration for efficiencies* – We found the scoring approach used by both infrastructure groups and the equipment group did not consider the overall project cost savings and efficiencies.
- 4.45 *Future cost savings* – The Department’s criteria for ranking funding requests and their final scoring approaches do not adequately address the future cost savings associated with projects. While one of the scoring criteria does consider whether there are efficiencies which might be achieved, it does not consider the level of future cost savings relative to the original project cost. Identifying projects with ongoing operational cost savings provides an opportunity to reduce overall costs or to move those funds elsewhere in the system. Given the significant financial challenges facing the province and the hospital system, it would seem appropriate to identify projects with significant future savings attached and ensure this is factored into funding decisions.
- 4.46 We identified a project with an estimated cost of \$4.5 million submitted to the equipment committee by Capital Health for 2012-13. This project had a projected savings of \$3 million per year. Much of the identified savings were to result from a decrease in full-time-equivalent staff in an area for which Capital Health had been experiencing significant labour shortages. This project was scored such that it was not approved during the initial funding allocations; the scoring did not appear consistent with the scoring matrix. Department management could not explain why the scoring was inconsistent or why a project with such a high level of future cost savings would not have been approved. This project was ultimately approved during our audit, after the initial capital equipment funding approvals. Health and Wellness management have not been able to provide an explanation of why this was not originally scored higher and approved.

Recommendation 4.11

The Department of Health and Wellness should revise the approach used to score infrastructure and equipment needs to include specific consideration of future cost savings.

Department of Health and Wellness Response:

DHW agrees with the recommendation and the need to include consideration of future cost savings in the decision-making process. Efficiency, costs savings and business cases are currently considered in the criteria for equipment. DHW will continue to review and revise how best to incorporate future cost savings in the decision-making process. The process will be reviewed by Sept 30, 2013.

- 4.47 *Current funding challenges* – During our audit we hoped to identify the total dollar value of the high priority capital needs across the province. However, we found that there is no information at the Department of Health and Wellness regarding system-wide needs. Most district health authorities recognize that funding is limited and only prepare detailed estimates for their priority lists to the extent they expect funding will be available. While some districts may have complete lists of capital requirements, it is not clear which items are urgent and the items further down the list have less detailed information on costs.
- 4.48 Although province-wide capital needs were not available, we reviewed the district's submissions to Health and Wellness for funding approval. These include all infrastructure requirements and each district health authority's 10 highest-ranked equipment requests.
- 4.49 For 2012-13, funding compared to requests was as follows.
- Infrastructure Repair and Renewal Committee: approved \$3 million of the \$6.1 million requested
 - Infrastructure Management Repair and Renewal Committee: approved \$9.5 million of the \$103 million requested
 - Equipment group: approved \$11.6 million of the \$37.9 million requested
- 4.50 This leaves more than \$120 million of repairs and replacements which district health authorities deemed necessary unfunded. Districts may obtain additional funding from their foundations, but this has averaged around 20% of total funding over the past five years and does not come close to bridging the gap.
- 4.51 Since we were completing detailed audit work at Capital Health, the province's largest district health authority, we reviewed medical equipment capital asset record listings to determine the number of pieces of equipment and its approximate age. Capital Health has more than 13,000 pieces of equipment. The District depreciates equipment over 10 years. While this is not an exact measure, it does represent a reasonable



assessment of equipment condition. We found 16.2% of medical equipment (more than 2,100 pieces) was between 10 and 15 years old; 4.7% (633 pieces) was between 15 and 20 years; and 5.3% (718 pieces) was over 20 years old. In total, more than 3,500 pieces of equipment, or 26% of Capital Health's equipment, exceeded 10 years of age.

- 4.52 *Future infrastructure requirements* – The Department's Infrastructure Management group estimated \$600 million would be needed for the hospital system's basic infrastructure needs over the next ten years. This only includes more significant items such as boilers, doors, windows and roofs, along with any major renovation projects. It does not include many other routine items such as plumbing and other systems. Management told us this is a preliminary estimate. We did not audit this figure, but use it as a reference point for the overall state of the system and potential funding needs. Equipment requirements are not included in this estimate and the equipment group does not have any estimate of total future needs for the hospital system.
- 4.53 \$22 million was allocated for all infrastructure projects in 2012-13; only \$6.4 million in emergency and specified funding was provided in 2011-12. Based on Health and Wellness' estimate, more than \$60 million is likely to be needed for basic infrastructure on an annual basis for the next ten years. The current capital stock is not sustainable given the rate of funding required to maintain it.
- 4.54 *Facility condition index* – With assistance from the districts, the department used facility asset management software to collect basic facility information on all hospital buildings in Nova Scotia. The software projects future repairs and renewals based on when roofs, windows and other infrastructure are likely to require replacement.
- 4.55 For each facility, a facility condition index is calculated by dividing the estimated cost to repair a facility by the estimated cost to replace the facility. Department management told us that the construction industry often uses a benchmark of 30% as an indicator of when facility replacement should be considered. Management acknowledged that 30% may be slightly different for hospital facilities, especially given the current infrastructure challenges in the hospital system; however it can still provide a starting point for higher-level decisions.
- 4.56 We reviewed the facility condition assessment data but did not audit it for accuracy or completeness. We removed smaller buildings, such as storage sites, boilers or health clinics that were often associated with a hospital site. This left 53 buildings around Nova Scotia. The results illustrate the significance of the infrastructure problems facing the province.
- For 26 buildings, the cost to repair compared to replacement cost exceeded 30%.
 - Each district had at least one building which exceeded 30%.

- 14 facilities exceeded 40%.
- Four facilities exceeded 50%.

- 4.57 *Energy performance contracting* – Energy performance contracting is an arrangement which offers energy efficiencies to building owners without incurring the upfront costs usually associated with infrastructure work. Energy services contractors perform energy infrastructure audits to identify potential savings. The building owner and the contractor then negotiate an agreement whereby the contractor will pay the upfront capital cost of improvements. The contractor’s expenses plus a profit margin will be paid back using the actual energy efficiency savings experienced by the owner. Once this initial investment plus profit has been paid, the new infrastructure and the resulting cost savings accrue to the building owners, in this case the province.
- 4.58 These contracts provide the expertise and financial capital to undertake significant energy efficiency capital upgrades without impacting capital budgets. According to the Federal Office of Energy Efficiency, the federal government has undertaken at least 85 retro-fits under these contracts, resulting in \$320 million in infrastructure investments and over \$40 million in annual savings.
- 4.59 To date, the province has not authorized the use of such arrangements for hospital infrastructure. Health and Wellness management told us this is because district health authorities are not permitted to incur debt under the Health Authorities Act without Governor-in-Council approval. Health and Wellness management also believe that the Department cannot undertake these agreements because the districts own hospital buildings. However, the province could permit these arrangements by providing Governor-in-Council approval. Alternatively, the province ultimately owns and is responsible for hospitals in Nova Scotia and accordingly, could undertake these arrangements on behalf of the districts. Energy performance contracting appears to have been used successfully by other governments in Canada and may provide a mechanism to improve the hospital system’s infrastructure.

Recommendation 4.12

The Department of Health and Wellness should examine the risks and rewards of energy savings contracts. The results of this analysis should be used to determine whether to pursue these contracts in the province’s hospital system.

Department of Health and Wellness Response:

DHW agrees with the recommendation and the need to examine the risks and rewards of energy savings contracts. DHW will review and complete the analysis by Mar 31, 2013.



Capital Planning at the District Health Authorities

Conclusions and summary of observations

Capital Health prepares annual three-year capital plans, but we found neither South Shore Health nor Guysborough Antigonish Strait Health Authority look at capital planning beyond the current year. In both instances, district management identified inconsistent and insufficient funding from the Department as the reason for only considering the current year. We found both South Shore Health and Capital Health have reasonable processes in place for prioritizing capital projects, although we recommended both districts develop an objective means of ranking all district capital priorities into multi-year plans. We noted Guysborough Antigonish Strait Health Authority only prioritized as many projects as necessary for their requests to the Department, instead of maintaining a full list of high priority projects.

- 4.60 *Long-term capital plans* – Capital Health’s three-year business plans included capital plans for 2011-12 and 2012-13 fiscal years. Guysborough Antigonish Strait Health Authority and South Shore Health did not have multi-year capital plans. In both cases, District management told us that a lack of available and consistent Department funding made multi-year capital planning ineffective and the work involved wasteful. South Shore Health began a living project priority list for the 2012-13 planning cycle; this is a prioritized list of all necessary projects. While it does not include the timeline for capital expenditures, it does give management useful information concerning priorities. Guysborough Antigonish Strait Health Authority did not have a comprehensive, district-wide capital priority listing compiled during the audit period.
- 4.61 Long-term strategic planning is an important part of any government organization. Multi-year capital plans for district health authorities would help district management focus on the infrastructure and equipment they will require to provide health services to the public.

Recommendation 4.13

Guysborough Antigonish Strait Health Authority and South Shore Health should prepare multi-year capital plans.

Guysborough Antigonish Strait Health Authority Response:

GASHA has separate planning processes for capital equipment and infrastructure repair & renewal.

Capital Equipment - Outside of significant investments from DHW, GASHA relies on community contribution by auxiliaries and foundations for new and replacement equipment. GASHA agreed that money donated by a community partner would only be used in the facility that partner supported. Lists are produced by each hospital and prioritized by hospital management. Infrastructure Repair & Renewal – In the fall

Engineering Services requests information from each site on the equipment repairs/replacements they require for the upcoming year and conducts an annual inspection of each hospital. A prioritized list of projects is forwarded to Senior Leadership for review, and the approved list is submitted to DHW for funding.

GASHA agrees with this recommendation and will be exploring options to implement a 3 to 5 year capital plan for the current business planning cycle.

South Shore Health Response:

South Shore Health agrees with recommendation. South Shore Health (SSH) will explore processes used by other government agencies to find one that will work for us. Multi-year plans are done for major physical assets such as SSH's master plan. A multi-year capital plan would be more useful if supported by multi-year funding projections from funding partners.

- 4.62 *Capital project prioritization process* – Each of the districts we visited for detailed audit work had its own processes for prioritizing capital projects as part of the annual budget process.
- 4.63 Capital Health has multiple processes for prioritizing capital expenditures. District management told us that for 2010-11, hospital departments identified their medical equipment needs and those needs were ranked by a district Capital Equipment Committee. Management said that due to a lack of available funding, this list was effectively rolled forward to the following year.
- 4.64 Capital Health's Construction and Facilities group prioritized infrastructure repair and renewal projects using an informal consensus approach. No objective scoring system was used to rank these projects. Clinical capital projects were ranked by the district's Space and Construction Committee, using a project scoring template, with established criteria for 2011-12. This Committee was disbanded prior to the 2012-13 planning cycle and the 2011-12 list was simply refreshed for 2012-13 to replace the limited number of projects addressed in the prior year, when only emergency funding was received from the Department of Health and Wellness. District management told us they plan to redesign the capital planning processes for 2013-14.
- 4.65 Guysborough Antigonish Strait Health Authority did not have comprehensive capital priority lists. The District had processes to identify medical equipment project priorities, but district-wide project lists were developed only to the extent necessary to fulfill provincial funding requests.

Recommendation 4.14

Capital Health and Guysborough Antigonish Strait Health Authority should develop an objective ranking system for all capital project priorities.

Capital Health Response:

In May 2012, Capital Planning was consolidated under one Director, where previously it



was shared among three. At this time a Capital Plan Budget was submitted and approved for the current fiscal year. A review of the prioritization process of Capital Projects began in August 2012, and a working group is developing an objective process that will be used for Capital Equipment, Capital Infrastructure, and Capital IT Projects which will be followed next fiscal year 2013/2014.

Guysborough Antigonish Strait Health Authority Response:

The Guysborough Antigonish Strait Health Authority's capital equipment process has a scale from 1 to 7 that uses a single criteria rating scale. The DHW infrastructure repair – renewal form uses a set of criteria that is weighted to produce a consolidated priority score when evaluating projects. GASHA agrees with this recommendation and will implement similar criteria for all capital projects.

Recommendation 4.15

Guysborough Antigonish Strait Health Authority should prepare an objective district-wide capital project priorities list.

Guysborough Antigonish Strait Health Authority Response:

The Guysborough Antigonish Strait Health Authority agrees with this recommendation.

- 4.66 South Shore Health did not prioritize capital projects for 2011-12 because the Department had informed districts there would be no capital funding. For 2012-13, capital projects were prioritized using the Department of Health and Wellness' repair and renewal scoring system with oversight from the District's Expenditure Prioritization Committee. We believe the process was a reasonable approach to identify capital priorities.
- 4.67 *Project submission justification* – We assessed each district's capital project submissions to the Department for the three districts we visited during our audit. Both Capital Health's and South Shore Health's capital project priorities were reasonably justified and supported. Submissions followed established Department and district policies and procedures.
- 4.68 We found Guysborough Antigonish Strait Health Authority did not always complete its own required forms for capital submissions to the Department of Health and Wellness; although we found the District did follow the Department's processes.

Capital Asset Records and Asset Management

Conclusions and summary of observations

We found preventative maintenance was not conducted as it should be and is insufficient to maintain the capital stock at all Districts we audited. Further, we determined the condition of infrastructure assets at Capital Health has made requests for immediate maintenance to repair equipment a common occurrence; these have taken precedence over preventative

maintenance. Long-term, preventative maintenance practices are more cost effective than corrective maintenance and are important to maintaining the capital stock to operate the province's hospital system.

- 4.69 *Medical equipment asset records* – The districts have various computerized and manual systems to track the many medical capital equipment assets and associated maintenance activities. None of the three districts we audited had a single consistent system for this purpose. The records and maintenance activities are managed by internal departments for some medical equipment at Guysborough Antigonish Strait Health Authority and South Shore, or by the Health Association of Nova Scotia. We understand other district health authorities also use this organization. We determined the asset records reasonably track age and maintenance activity, although we found some minor issues with completeness of this data across all three districts.
- 4.70 None of the districts consistently tracked the current condition of medical equipment assets. All districts rely on professional judgment of staff and management to maintain awareness of asset condition. Accurate records including detailed assessment of current condition would be helpful to management when making capital planning decisions.

Recommendation 4.16

Capital Health, Guysborough Antigonish Strait Health Authority, and South Shore Health should track the current condition of significant medical equipment assets and infrastructure.

Capital Health Response:

All new equipment purchases are being entered in a database that includes life cycle and will improve the ability to track equipments condition over the period it is in service. The current condition of several other groups of medical equipment are being tracked separately, however these records are not kept for all areas. Work is ongoing to create a comprehensive list and full assessment of significant medical equipment assets and infrastructure. Management plans to continue improved tracking.

Guysborough Antigonish Strait Health Authority Response:

The Guysborough Antigonish Strait Health Authority agrees with this recommendation however a substantial provincial investment is required to implement the SAP asset management application. This could be a strategic plan item for Merged Service Nova Scotia once operational. In the interim, GASHA has discussed options and opportunities with Clinical Engineering Services at Health Association Nova Scotia to determine if expansion of their database is possible.

South Shore Health Response:

SSH agrees with this recommendation and is currently working with internal departments and our Clinical Engineering Service on a methodology that will capture the current condition of medical equipment and infrastructure during preventative maintenance activities.



- 4.71 *Preventative maintenance* – Preventative maintenance should be performed on medical equipment assets in the hospital system. The frequency is generally determined by the equipment manufacturers, although district staff occasionally use professional judgment to modify the schedule for some equipment.
- 4.72 We selected a sample of 100 medical equipment assets from across the three district health authorities we visited to determine whether preventative maintenance was conducted as appropriate based on each district’s schedule. We found a significant percentage of preventative maintenance was not carried out. While we found the most recent maintenance cycle had often been completed, we noted that previous cycles had not. Overall, the established frequencies were not met in 40% of the samples; the results are summarized in the following table.

| District Health Authority | Most recent preventative maintenance complete? (%) | Preventative maintenance conducted at appropriate frequency (%) |
|---|--|---|
| Capital Health – 40 samples | 35 (88%) | 21 (53%) |
| Guysborough Antigonish Strait Health Authority – 30 samples | 27 (90%) | 23 (77%) |
| South Shore Health – 30 samples | 23 (77%) | 16 (53%) |
| Total | 85 (85%) | 60 (60%) |

- 4.73 At Capital Health, the bio-medical engineering department attaches a risk rating to each piece of equipment requiring preventative maintenance. These ratings are used to prioritize the work load, with any high risk items intended to be addressed first. While these ratings do not exist for other Districts, or for the lab or diagnostic imaging groups at Capital Health, we felt this was still a reasonable assessment of the challenges facing preventative maintenance.
- 4.74 We assessed the compliance report for February 2012 and found 74% of high risk equipment preventative maintenance had been completed. The overall compliance rate was 62%. Preventative maintenance is not carried out as often as intended.
- 4.75 We believe not performing preventative maintenance as necessary and scheduled will ultimately lead to untimely equipment failures, potentially resulting in increased wait times and negative impacts to patient safety. It could also lead to increased costs from preventable repairs and unplanned purchases.
- 4.76 *Infrastructure assets* – Infrastructure asset conditions are monitored and evaluated by facility management personnel responsible for maintenance in the districts. This has also included the use of external consultants to conduct facility condition assessments, on an as needed basis. Facility maintenance systems are in place at all districts. We did not test preventative maintenance activities for hospital infrastructure, instead focusing on the equipment within the hospitals.
- 4.77 Capital Health facility management and supervisors indicated they find it difficult to meet the required preventative maintenance schedules for their facilities. In many

cases, preventative maintenance is not occurring as it should; similarly, equipment preventative maintenance schedules often cannot be achieved with available funding. Management indicated this is related to a combination of aging assets, an increase in corrective repairs rather than preventative maintenance, along with insufficient engineering staff to address the repairs.

- 4.78 South Shore Health management provided evidence showing that while they are able to complete most of the required preventative maintenance, it occasionally takes longer than intended. They provided a chart showing when the scheduled maintenance for one month was completed. While 95% of the work was completed, only 66% was carried out in the month intended; a further 27% was completed the following month.
- 4.79 Guysborough Antigonish Strait Health Authority does not have a clear record of preventative maintenance which was not completed on time.

Recommendation 4.17

Capital Health, Guysborough Antigonish Strait Health Authority and South Shore Health should ensure preventative maintenance activities are completed as scheduled.

Capital Health Response:

PM (preventative maintenance) is performed to maximize patient and staff safety while minimizing downtime and costs. Devices with wearable parts undergo PM so parts can be replaced before a defect and higher cost incurs. In some cases, field practice indicators support no PM cycles and when manufacturer's guidelines are being followed, no PM is recommended. Management will work on an improved procedure (where applicable) around PM cycles, documentation, and increased accountability on frontline and those responsible for PM. CDHA is in the process of revising the Asset Inventory and Online Work Order System to be more comprehensive, with a focus on PM work.

Guysborough Antigonish Health Authority Response:

The Guysborough Antigonish Strait Health Authority agrees with this recommendation. This solution would be available in the SAP asset management application but in the interim, GASHA will evaluate other applications/solutions that could bridge the gap.

South Shore Health Response:

SSH recognizes the importance of preventative maintenance. We work to complete all activities as scheduled, but at times, resources constraints will not permit all to be done within the planned time period. The district will perform a review of all current preventative schedules/activities and develop a prioritized preventative maintenance schedule thus ensuring that if there are infrequent occasions when all maintenance cannot be completed in a given timeframe, resources will be directed to higher priority maintenance activities.

- 4.80 *Adverse events involving equipment and infrastructure* – We looked at adverse events at hospitals in the three districts we audited to determine whether deferred



maintenance, or failure to replace equipment or infrastructure, had led to specific harm to patients or staff. Each District maintains extensive records around adverse events. We did not find any evidence of specific instances in which patient or staff harm could be traced back to failure to complete maintenance or failure to replace or repair equipment or infrastructure.



Department of Health and Wellness: Additional Comments

The Department appreciates the thorough review by the Auditor General on Capital Planning and recognizes the importance of reviewing and revising the process in order to make continuous improvements in capital planning. We agree with all of the recommendations and implementation of many of the suggested improvements have already commenced. Although many areas for improvement have been identified, there have been tremendous advances in Capital Planning during the past three years.

Capital District Health Authority: Additional Comments

#78 – CH facility management and supervisors note that preventive maintenance is not always completed as scheduled/required -this is due to: not being aware of new equipment in use, information not being centrally recorded (such as PM requirements), equipment and/or infrastructure being outdated, or having resources available to do the PM work (vs resources being dedicated to repairs).