



**CANADA'S NATIONAL LABORATORY FOR
PARTICLE AND NUCLEAR PHYSICS**

**LABORATOIRE NATIONAL CANADIEN
POUR LA RECHERCHE EN PHYSIQUE
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12 March 2008

MEMORANDUM

TO: Colin Gay, *Chair*, Policy and Planning Advisory Committee (PPAC)
FROM: Timothy Meyer, TRIUMF
RE: Five-Year Plan Steering Committee
Supplemental Information for PPAC

Dear Colin,

On behalf of the Five-Year Plan Steering Committee (5YPSC), I write to provide additional information to your committee in response to several requests. Thank you for your careful work in reading the package of materials we provided. I have grouped our responses into categories below. I hope this information is helpful to you as PPAC proceeds with its work.

We are providing this information to you as a stand-alone memorandum in order to preserve the open and transparent process to which TRIUMF is committed for developing the Five-Year Plan (5YP). The PPAC task is not easy, but your report's value will be undermined if the perception is that the committee was unduly influenced by the TRIUMF senior management or the proponents of any particular project. TRIUMF needs your wisdom and we need to be able to use your wisdom as much as possible.

How the PPAC advice will be used

The PPAC report is the first step in a series of community-based activities that will develop the strongest possible 5YP for TRIUMF. The 5YPSC has presented PPAC with a "wish list" of (nearly) all possible activities that involve TRIUMF in the years 2010–2015.^a PPAC's report will provide guidance on which activities are sufficiently high-impact and appropriate for TRIUMF that they are high-priority for the community. A full cost/benefit analysis for each "wish list" item is not practical (it takes resources to estimate the need for resources!) and not even appropriate at this stage. The field needs to be narrowed first. We are turning to PPAC to perform this critical task (using the three criteria described in the Terms of Reference letter).

^aFor instance, we note here that projects such as superTACTIC for ISAC-I and TREK at J-PARC were not described at great length.

PPAC's advice will help 5YPSC identify which activities are sufficiently promising that a full resource (and benefit) analysis is worthwhile. The priorities that PPAC identifies will be used to focus the next phase of work in developing the 5YP.

After narrowing the wish list as proposed by PPAC, the 5YPSC will commission the TRIUMF Kitchen Cabinet Advisory Committee to perform a "reality check" on the general features. The TRIUMF Users Executive Committee will also be asked to provide comments. The 5YPSC will then prepare a series of detailed cost/benefit analyses for the high-priority activities; specialized technical feedback from the Special Subatomic Physics Experiment Evaluation Committee, the Accelerator Advisory Committee, and the Life Science Projects Evaluation Committee will be incorporated along with discussions with the proponents and leaders of each activity.

This staged process explicitly moves from a pure "science and other benefits" analysis toward one that more fully incorporates the resource requirements and other costs. The community, through PPAC and other venues, will be invited to provide additional feedback and comments along the way. It is this extended sequence of steps that makes the first step by PPAC all the more important and urgent.

We are convinced that this approach is the correct one to generate the most compelling and robust strategy for the future of TRIUMF.

Contact people for further questions

The 5YPSC does not have individual contacts per 1-pager. The documents were prepared primarily by non-advocates on the committee in consultation with the project proponents; the entire committee then discussed and debated the documents.

If PPAC can identify specific topics for which you absolutely require additional information that could be provided by experts, please let us know as soon as possible. We can arrange for the experts to be available in a public setting to address your questions. The key is to ensure a fair and consistent treatment. This feature will ensure that the PPAC report has maximum impact at all levels.

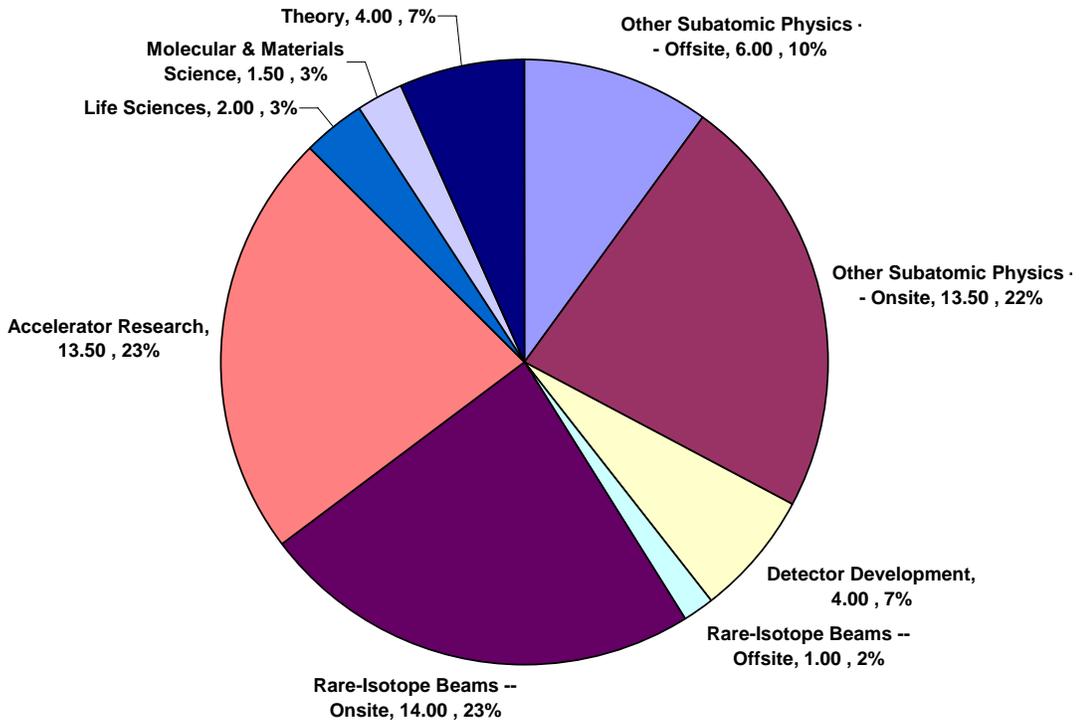
Additional information on resources

The 1-pagers contain as much detailed personnel and resource information as the 5YPSC could practically gather on the timescales involved. It would be difficult to add selectively to the information at this point in time. We still hope that you will be able to rank the projects according to the criteria specified in the PPAC charge.

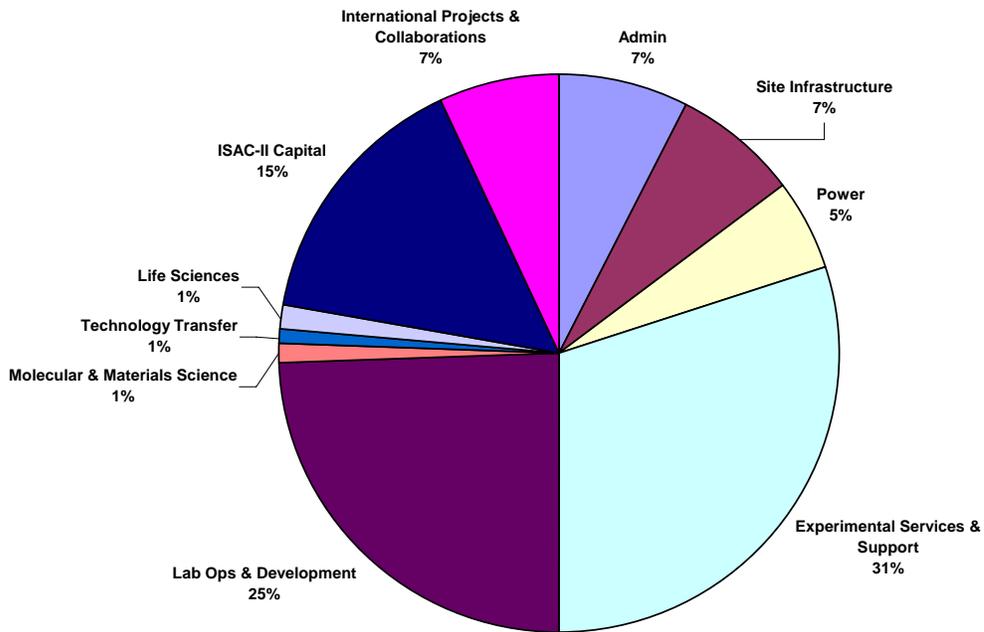
We enclose here several additional items of information that may help your work.

- An analysis of the distribution of TRIUMF's Board-Appointed Employees (BAEs) by research category.

- An analysis of the FY2006 budget expenditures by general category of costs (summing over materials and salaries).



Distribution of TRIUMF BAEs

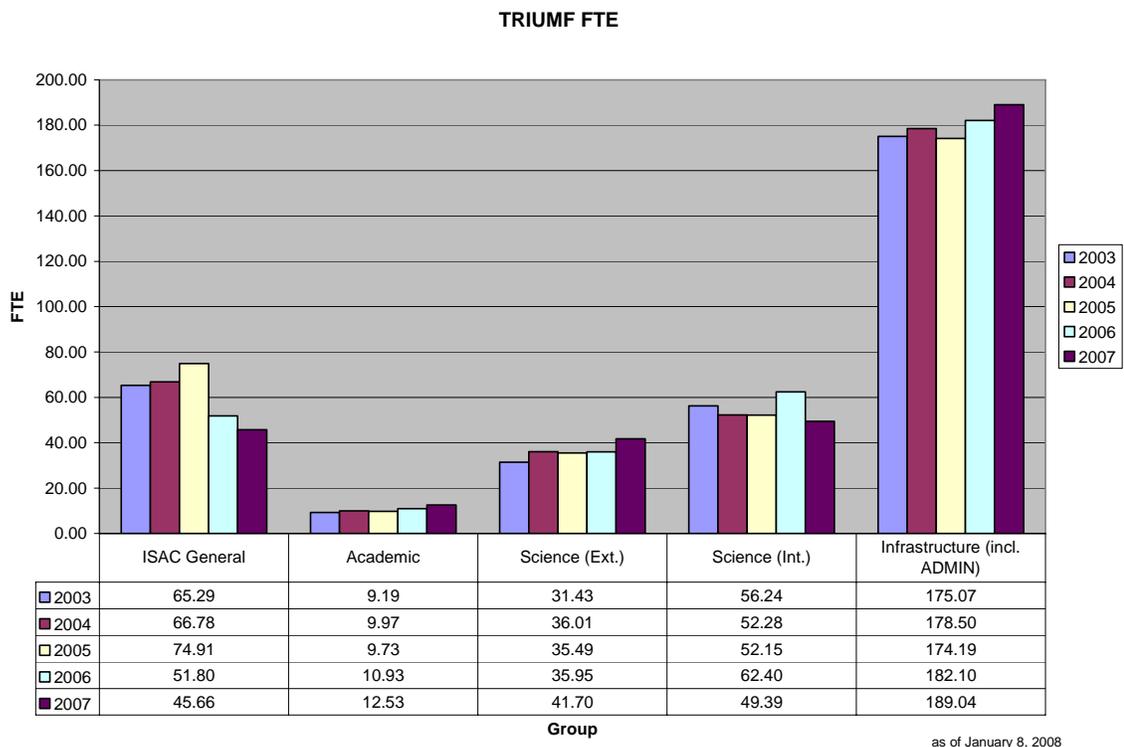


FY2007 Expenditures by Activity Area (Materials & Salaries)

The list of investigators for each 1-pager (both TRIUMF-affiliated and non-TRIUMF) contains significant overlap among the projects. In some cases, investigators are showing support of, and interest in, several efforts but will wait for clarification of the program before committing in the longer term. The 5YPSC recognized that listing specific names for each activity would introduce errors and ambiguity, but it was judged sufficiently useful to be retained.

TRIUMF resources, both hardware infrastructure and personnel, will have to be balanced across the projects by the 5YP Steering Committee when building a consistent plan using the priorities from PPAC. We agree that not all opportunities for synergy or “added benefit at little extra cost” are visible in the information we provided. We recognize that PPAC will need to make judgments based on imprecise, vague, and questionable statements about resource requirements. But we need to start somewhere and we need to start with the science, the “benefits.”

The following figure shows the estimated deployment of NRC-supported TRIUMF staff from April 1, 2003 to March 31, 2008. This data is gathered from timesheet information entered by employees. It illustrates the transition from construction and commissioning of ISAC to general operations and support.



“Buildings” proposal to the province

TRIUMF’s operations are primarily supported via a contribution through the National Research Council (NRC). The province of British Columbia has historically provided support for

buildings on the TRIUMF site. A chief element of TRIUMF management's **present** 5-year plan (2005–2010) is the acquisition of provincial support to design and construct a new research complex. The new complex would include a new building for life sciences, a new building to house the ATLAS Canadian Tier-1 Data Centre in the long term, and an underground tunnel to allow additional beam extraction from the cyclotron to the ISAC facility.

A request for support of a design study to map out this initiative is presently before the appropriate cabinet members in the BC government. As discussions are in progress, it is difficult to state with any certainty the outcome of this proposal. The request is for the design of a phased building process that could total more than \$50 million for the entire initiative. If support from the province were to become available, it would primarily cover just the “bricks and mortar,” along with some basic furnishing such as benches, fume hoods, and so on. The national CFI proposal on radiotracers would provide one mechanism for exploiting the opportunity such a building might provide. Support for hardware such as additional hot cells would probably come from the 5YP request to NRC.

TRIUMF management is seeking expansion of several key partnerships to help support the acquisition and operation of equipment in the new building beyond the present complement.

In the particular care of the life sciences program because it is a small program that would grow, the postdoctoral fellows are essential to enable investigators to get the program off of the ground. These projects are new endeavors and will require some level of input to acquire preliminary data to enable grant request to move forward. The principal investigators would be new hires unless they are named. In general, the life sciences activities would require all new resources because of the present small size of the program. There is likely little overlap among the different activities; the projects are full-time efforts and there might be some synergy and collaboration.

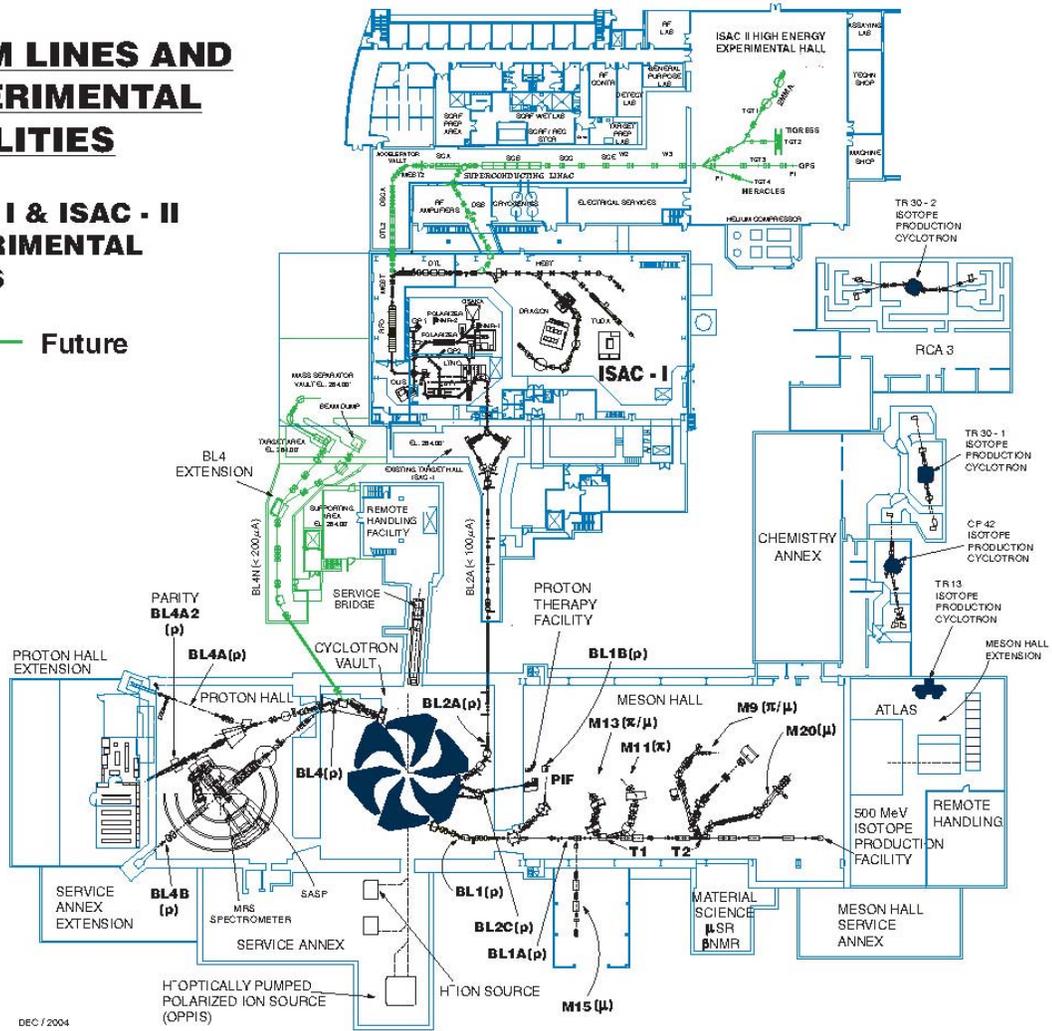
Sketches of TRIUMF

We recognize that the set of jargon describing the TRIUMF site can be difficult to penetrate. We include here some diagrams of the site that should together provide some insight.

BEAM LINES AND EXPERIMENTAL FACILITIES

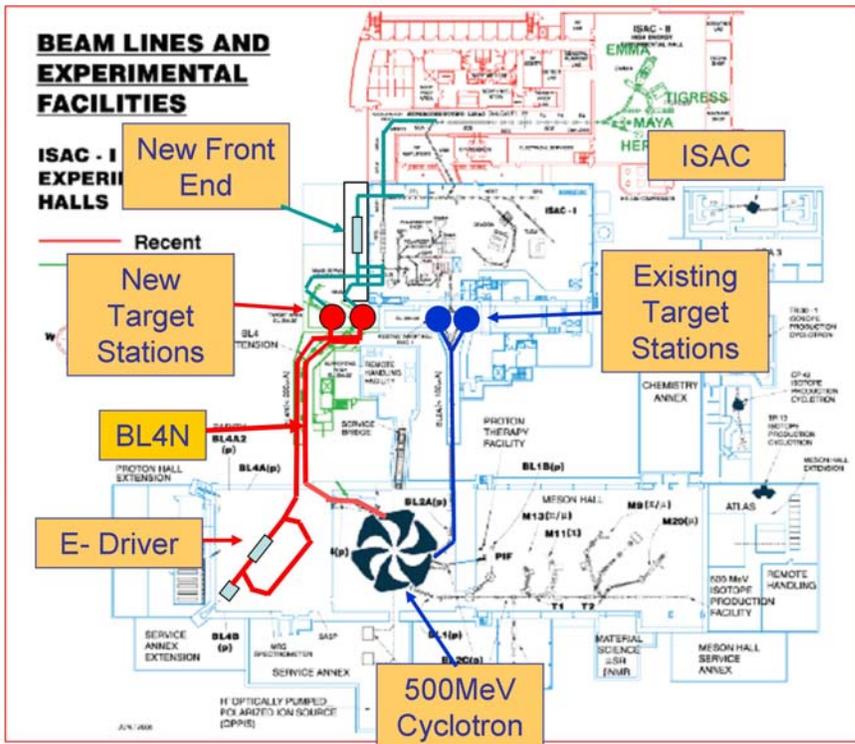
ISAC - I & ISAC - II EXPERIMENTAL HALLS

— Future



DEC / 2004

The proposed e-linac would sit in the presently not-fully-used proton hall. Its beamline to the ISAC complex would follow along the green pathway that starts from BL4(p). The ultracold neutron source could be placed in the meson hall.



Proposal:

- BL4N is proposed to deliver 500MeV protons to two target stations for beam production and an additional RIB station for development
- Take advantage of the shielded and unused proton hall to add an electron driver to supply electrons to the new target area via a separate beamline;
- Develop new ISAC front end to permit **three simultaneous RIB beams (two accelerated)**.

