

Welcome & CF

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Co-Spokesperson of DUNE

DUNE ND Workshop, Fermilab, 9th June 2017

1. Introduction

DUNE

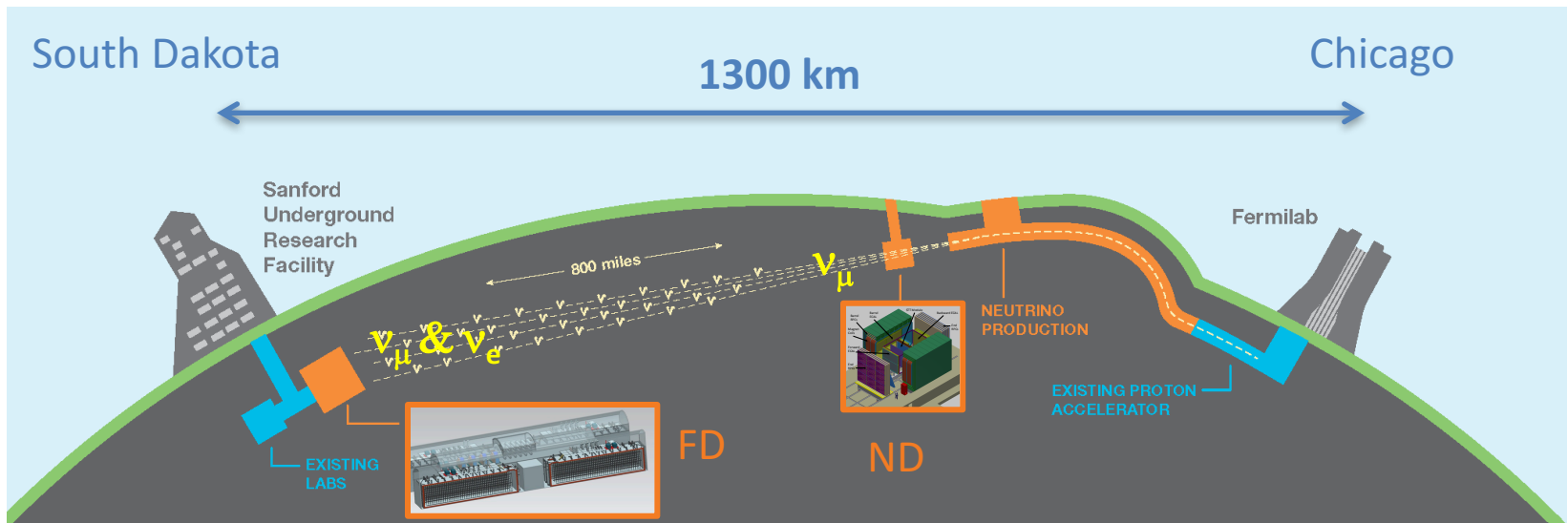
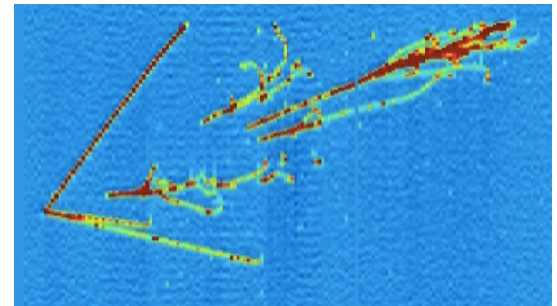
- **DUNE Scope**

- **Four 10-kt LAr-TPC Far Detector (FD) modules**

- Modules #1 and #2: CD-2/3 review in 2019
- Modules #3 and #4: approval early 2020s

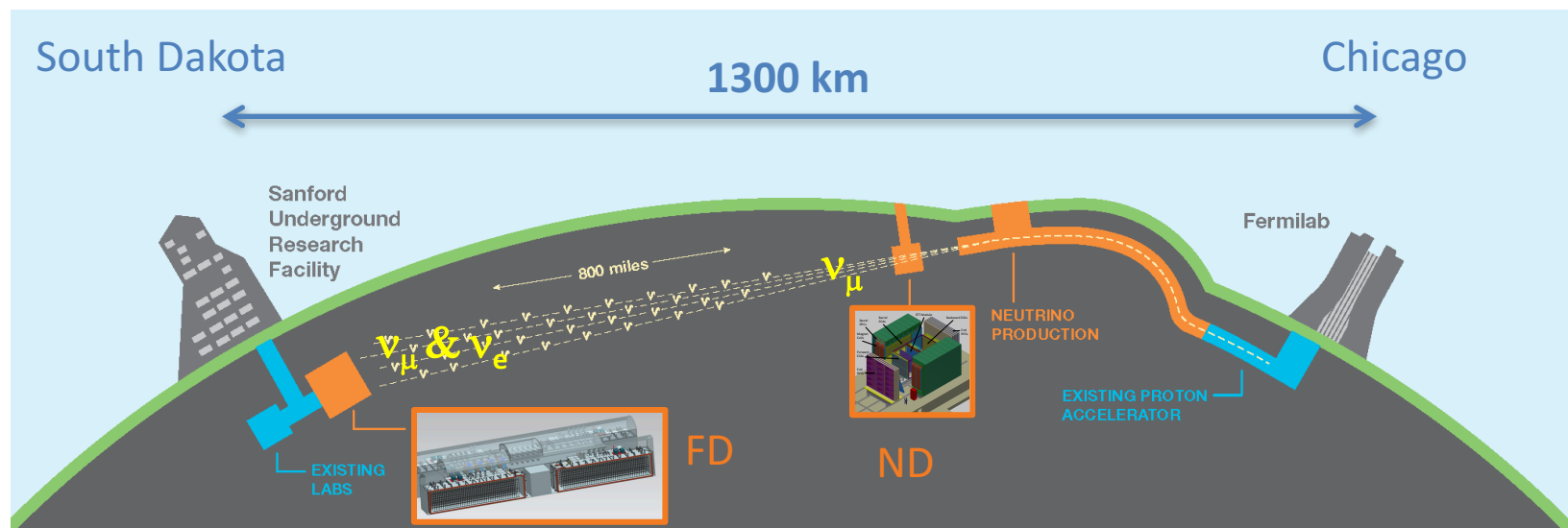
- **DUNE Near Detector (ND)**

- **Far site CD-2 review in 2019 (ND CDR)**
- **Near site CD-2 review in 2020 (ND TDR)**



LBNF/DUNE: path to construction

- **US FY17 funding and FY18 PBR = good news!**
 - **We are on the real axis**
 - Ground-breaking at SURF in July !
 - FD construction consortia forming
 - Discussions with Funding Agencies within RRB are advancing
 - LBNF/DUNE is entering the construction phase, \$\$\$ being committed
 - **Need to be realistic in potential scope for ND**



2. ND Concept Study

Near Detector Concept Study

- **Charge:**

- Develop a proposal for a DUNE collaboration near detector **concept** by the end of **2017**

- **Study should:**

- Ensure that the proposed near detector concept **meets the requirements of the primary scientific goals of DUNE.**
- Assume a single near detector hall of a **similar to the CD-1-R design**, located at a distance of between **360 m** and **575 m** from the target.
- Present a **plausible funding model** for the proposed concept, based on the interests and likely contributions to the detector construction from the international collaboration
- Focus solely on the design of the Near Detector; the scope of the study does not extend to the design of the LBNF near site facility

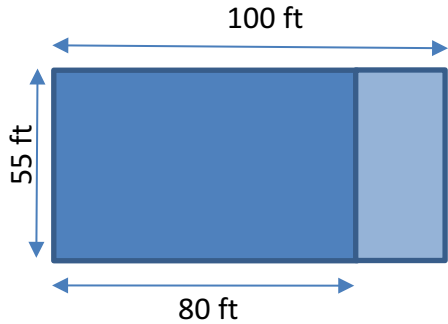
3. CF

Conventional Facilities

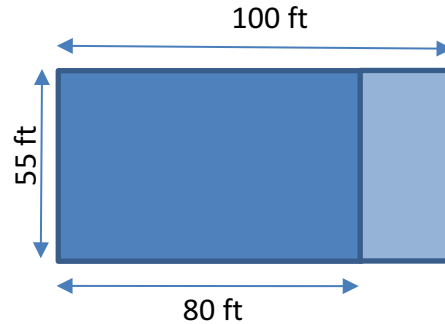
- **CF is a major cost driver in any large-scale construction project**
 - Can't be ignored in ND discussions.
- **DUNE management asked LBNF for cost estimates of a number of potential options:**
 - Thanks to Thomas Hamernik
 - dune-doc-3866 : alternative ND hall sizes
 - dune-doc-3914 : alternative location
- **Estimates of increase in LBNF DOE TPC**
 - Includes escalation and contingency

Conventional Facilities

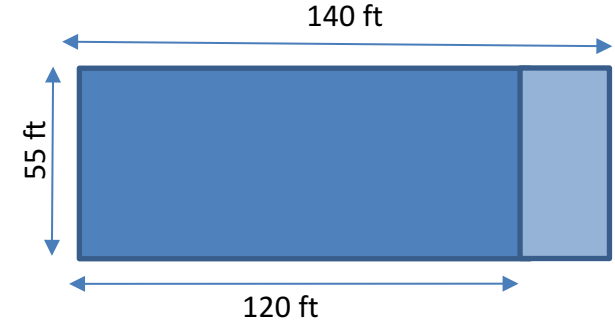
Current @ 575m



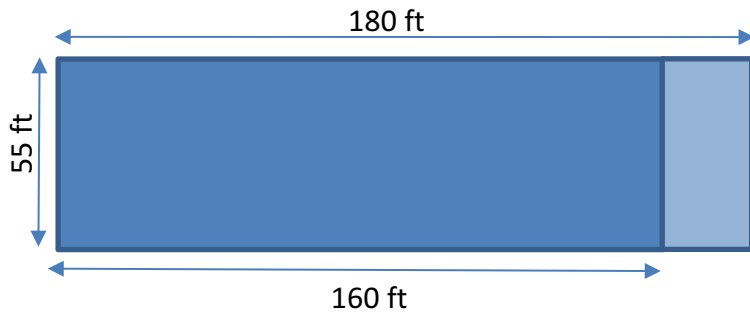
Option A: current @ 365m



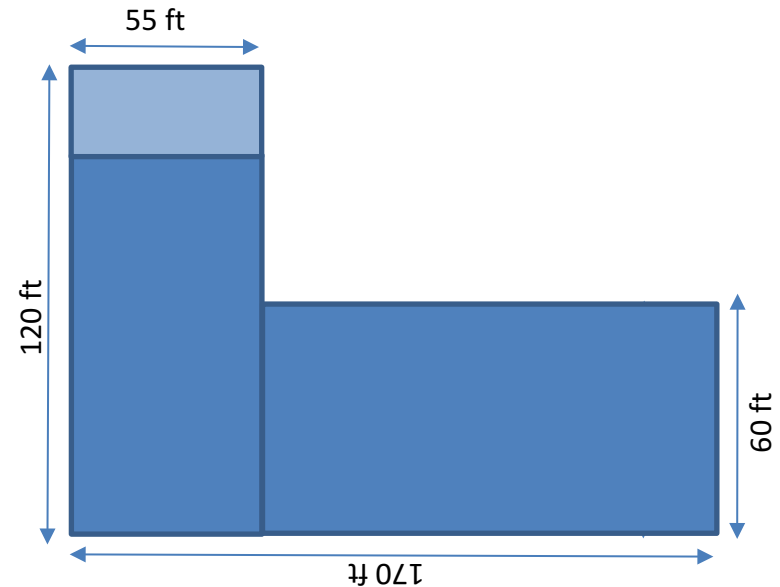
Option B: Existing + 50%



Option C: Existing + 100%

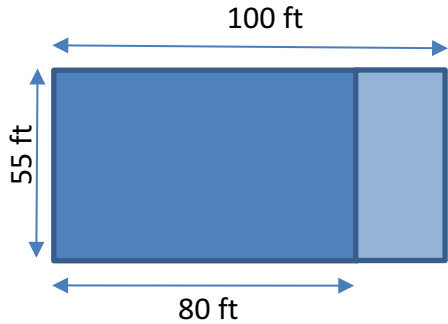


Option D: "DUNE Prism"

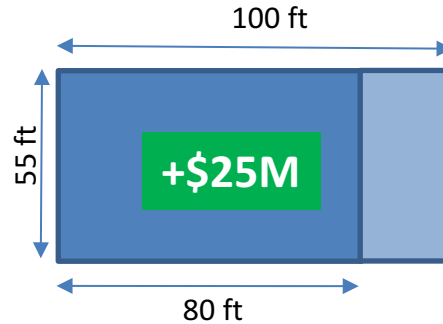


Conventional Facilities

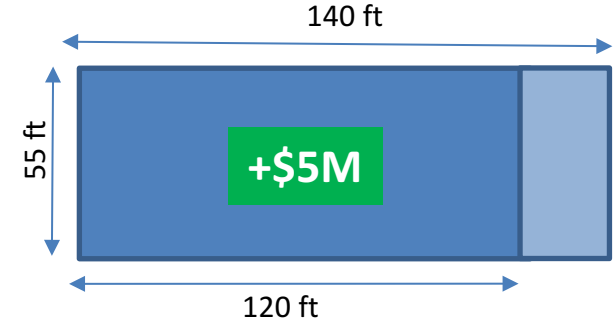
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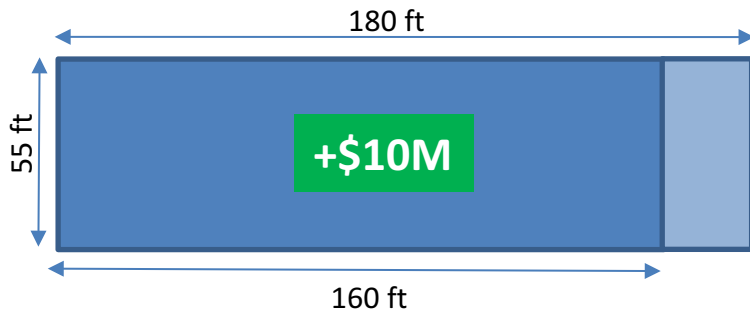
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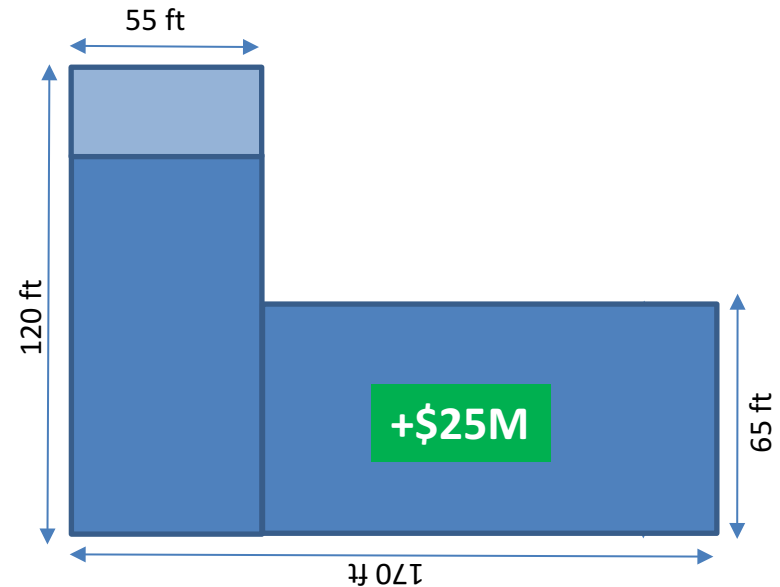
Option B: Existing + 50%



Option C: Existing + 100%



Option D: "DUNE Prism"



Comments

- **Even at \$10M level, cost increases are difficult to absorb by LBNF**
 - Can't be ignored in ND discussions
- **Doesn't rule out options**
- **But....**
 - Would need to be a very strong scientific case
 - e.g. can not reach DUNE primary science goals with existing hall size

Summary

Summary

- **DUNE is moving rapidly towards construction phase**
 - Obviously good news
- **Will need a CDR for the ND by 2019**
 - Part of the DUNE scientific case
- **Will need a TDR for the ND by 2020**
 - Challenging timescale
- **This is an exciting time!**
 - We are defining the direction for the DUNE ND
 - Need to start to take decisions...

Summary

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 - Challenging
- **Exciting time!**
 - Defining the direction for the DUNE ND
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Let's have a good workshop

Questions?