

# **Notes regarding strategy/ materials for FLARE design**

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# Notes

## What is needed to get to a design ?

- The design has 4 elements
  - Cryostat
  - Internal + Proximity cryogenics
  - Far cryogenics and surface items
  - TPC modules

# Options

## What can be borrowed and what needs new work

- CERN EDMS has all information regarding protoDUNE, DUNE, ICARUS, SBND designs and installation.
  - NP01 - ICARUS
  - NP02 - Vertical Drift protoDUNE
  - NP03 - Platform for developing neutrino detectors.
  - NP04 - Horizontal drift protoDUNE.
  - SBND - at FNAL.
- There is too much information including agreements/MOU's etc. We will need help to pinpoint to just the right items.
- Cryostat options need to be kept open
  - GTT has been a default option, but it is unclear if it is optimum for a small cryostat for FLARE
    - It is very thick (taking space), and the corrugations may be unnecessary and take space.
    - We need a vacuum cryostat option, but with an open top.

# TPC

## TPC design

- The TPC has two options
  - The horizontal drift with pixels is similar to DUNE/ND. The high voltage design should not be difficult given the small gap.
    - Take the current model and perform some specific COMSOL studies.
    - Each TPC is not much larger than a DUNE purity monitor. But an assembly of 21 TPC modules needs some care.
  - Optical readout with vertical drift.
    - This would change the HV design quite a bit. May require larger gap at the bottom.
    - Trigger can be provided by direct scintillation detection with VUV capable SiPM from Hamamatsu. Version 4 SIPMS are now available.