How Other Systems/Protocols Address Capture and Destruction of Methane from Storages

ClimateCHECK
SET THE STANDARD™

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Developing a Covered Manure Storage Protocol: Science at Work

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KEY MESSAGES

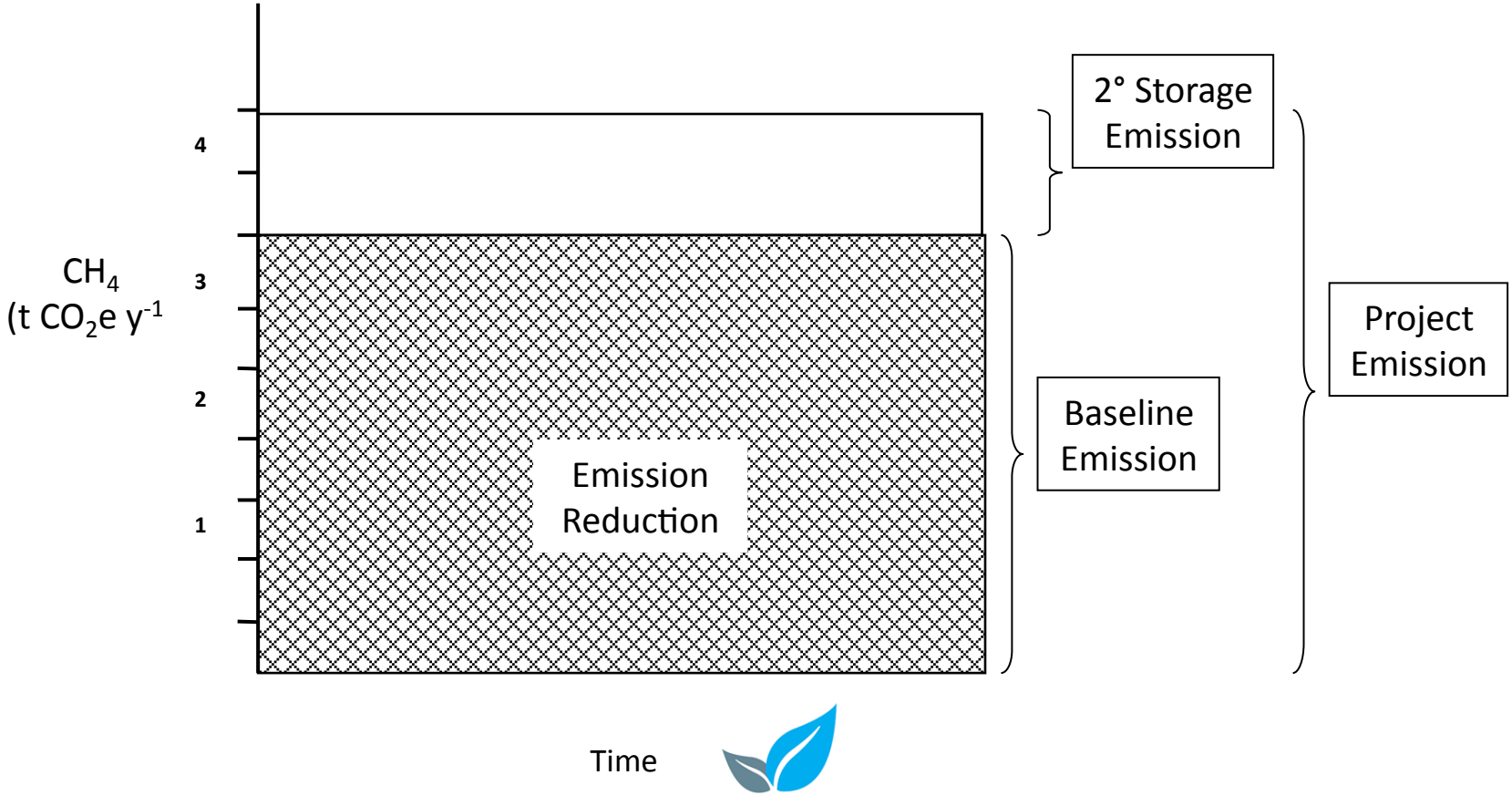
- Protocols and methodologies provide guidance for Alberta covered manure storage protocol.
  - Approach
  - Scope
  - Baseline Estimation
  - Project Monitoring and Measurement

Approach

- Existing protocols make assumptions, according to conservativeness, to address knowledge gaps :
  - First — baseline emissions are estimated as a function of regional air temperature, not of stored manure temperature.
  - Second — baseline emissions are estimated irrespective of facility configuration and operation.
  - Third — project emissions are understood to differ from baseline emissions. That is, because data to show otherwise is lacking, installing a cover is assumed (by potentially altering temperature, retention time, N content, pH) to change. Thus, CH_4 destruction is measured, but emission reductions generated cannot exceed baseline estimate.
  - Existing protocols consider covering of manure storage to be additional by exceeding regulation and common practice.

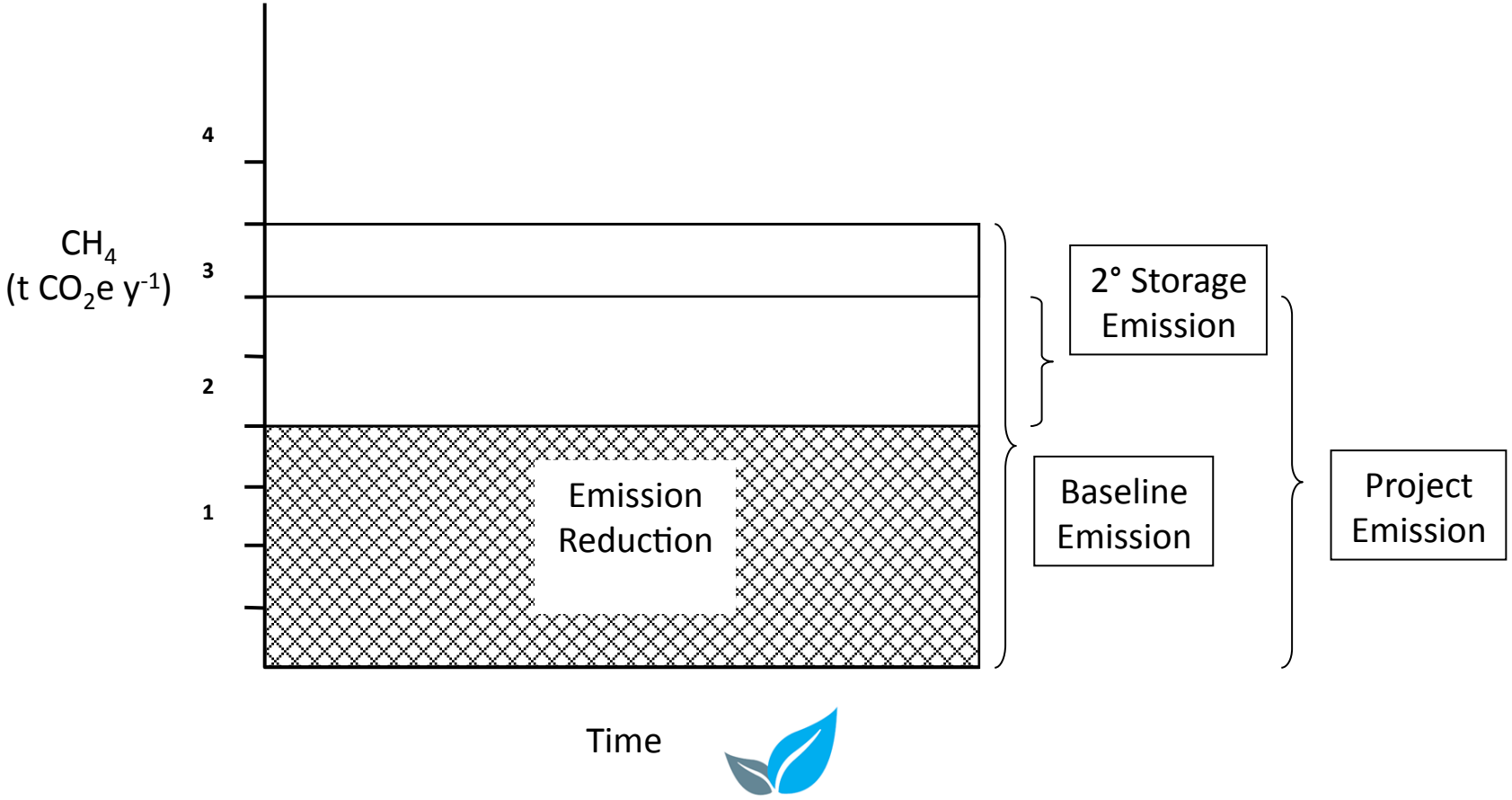
Approach

- Estimated baseline constrains reduction potential
  - Scenario A — project emissions exceed baseline emissions



Approach

- Estimated baseline constrains reduction potential
  - Scenario C — project emissions less than baseline emissions



Scope

- Existing capture-and-destruction protocols exclude:
- N_2O emissions;
- Emissions from landspreading of effluent.
- Some capture-and-destruction protocols include:
- Emissions from secondary storage;
- Emissions associated with beneficial use of biogas.
- Alberta Offset System requires:
- All gases are addressed;
- Boundaries determined by addressing all SSs.

Scope

- Existing Alberta protocols (Pork, Dairy) include:
- N_2O emissions;
- Emissions from landspreading of effluent.
- Consistent with Alberta comprehensive approach, but as a 'first-generation' protocol:
- Include emissions from secondary storage;
- Exclude use of biogas (and exclude non-agricultural feedstocks);
- Focus on capture-and-destruction as add-on to Pork and Dairy protocols;
- Projects interested in use of biogas can implement approved Biogas Protocol.

Baseline Estimation

- Existing capture-and-destruction protocols estimate baseline:
- Climate Leaders and GHGS — according to regional estimates of methane produced for known liveweight of animals.
- CDM — use “most recent IPCC Tier 2 approach”.
- Climate Action Reserve — according to monthly temperature, but using ‘default’ volatile solids estimates.

Baseline Estimation

- Existing Alberta protocols (Pork and Dairy) use more farm-specific approach, which is based on Canada's National Inventory approach (which is like IPCC Tier 2).
- Both Pork and Dairy allow input of farm-specific feeding and animal performance data to estimate manure CH_4.
- Both Pork and Dairy allow practice of spreading in spring to decrease CH_4 emissions from stored manure.

Project Monitoring & Measurement

- All protocols and methodologies monitor animal populations.
- Climate Leaders and GHGS use annual average population and live weight.
- Climate Action Reserve uses annual average population based on “monthly population data”.
- Alberta protocols use monthly animal data.
- Only Alberta protocols (Pork and Dairy) use farm-specific feed and animal performance data.
- Volatile solids calculated based on quality of feed and on feed conversion.

Project Monitoring & Measurement

- All protocols and methodologies measure CH_4 capture-and-destruction (may be generic, non-regional, part of protocol).
- Most protocols address emissions from secondary storage (CDM, CAR, GHGS — 30% of estimated baseline).
- Most protocols address fugitive emissions from secondary storage (CDM 15%, CAR 5% of estimated baseline).
- CAR and GHGS have most detailed prescription of capture-and-destruction monitoring and measurement:
- Includes biogas flow, CH_4 concentration in biogas, combustion efficiency of flare, temperature of flare, etc.

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