

# Review of C-PLAN simulations

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## 1. Introduction

I have reviewed the scenarios and changes to the Climate Policy Analysis (C-PLAN) model in the version 'C-PLAN for Niven 2023-12-18-update' forwarded by Anita King on 18/12/23 at 9:40 AM. The scenarios reviewed are listed in Table 1.

**Table 1.** 2024 C-PLAN Scenarios

Abbreviation	Name	Description
CPR	Current Policy Reference	Intended primarily for use as a reference scenario, this scenario aims to mimic current climate policy settings as at 1 July 2023
DemoITN	Demonstration path for Ināia tonu nei	This is the Demonstration Path as used in Ināia tonu nei, updated for methodology changes and data updates.
DemoEB4	Demonstration path for Emissions Budget 4	This is the proposed demonstration path for Emissions Budget 4. In addition to technologies in DemoITN, it has methane-reducing technology, improved dairy genetics, other agricultural updates, changes to transport demand, and changes to emissions caps and removals.
Daccs EB4	Demonstration path for Emissions Budget 4 with DACCS	This is the same as DemoEB4, except with the addition of the Direct Air Carbon Capture & Storage Technology.
HTHS	High Technology High Systems Change	Most technologies in C-PLAN are turned on (DACCS and hydrogen are the current exceptions), as are changes like larger reductions in transport demand.
HTLS	High Technology Low Systems Change	Most technologies in C-PLAN are turned on (DACCS and hydrogen are the current exceptions), but changes to transport demand etc are much more modest.
LTHS	Low Technology High Systems Change	Few technologies beyond those used in DemoITN are turned on, but there are changes like larger reductions in transport demand.
LTLS	Low Technology Low Systems Change	Few technologies beyond those used in DemoITN are turned on, and changes to transport demand etc are much more modest.

Source: Anita King, Climate Change Commission.

## 2. Review of the 2014 C-PLAN scenarios

To review the 2024 C-PLAN scenarios implemented by the Climate Change Commission (CCC), I have (1) confirmed that the updated reference/baseline scenario is sensible and uses appropriate data sources, and (2) undertaken multiple consistency checks for each scenario. Specifically, I have:

1. Inspected the model files to make sure that the scenarios are implemented as described in Table 1.
2. Run all scenarios independently and investigated the solution statement for each year in each scenario to ensure that the model has solved correctly.

3. Checked that the emissions caps specified for each scenario are simulated in the model (if applicable).
4. Analysed the results to ensure that they are logical, given the input assumptions for the scenario.

As indicated in Table 2, the consistency checks are satisfied in all scenarios considered in this review.

**Table 2.** Scenario check considered in this review

<b>Scenario</b>	<b>1. Scenarios implemented as described</b>	<b>2. Solves correctly</b>	<b>3. Emissions cap simulated</b>	<b>4. Logical results</b>
CPR	✓	✓	Not Applicable	✓
DemoITN	✓	✓	✓	✓
DemoEB4	✓	✓	✓	✓
Daccs EB4	✓	✓	✓	✓
HTHS	✓	✓	✓	✓
HTLS	✓	✓	✓	✓
LTHS	✓	✓	✓	✓
LTLS	✓	✓	✓	✓

### **3. Other comments**

In addition to the review components noted above, at the request of the CCC, I have added additional features to the C-PLAN model in June and November 2023. As these changes have involved inspecting and modifying the code, an informal review of modifications made by the CCC was implemented during these activities.

The CCC has made good progress in developing the C-PLAN model to suit their needs, including modifying the file structure, and refining the model so that it more accurately represents the New Zealand and Rest of World economies.