Mode Selectable Switch

Subgroup EV

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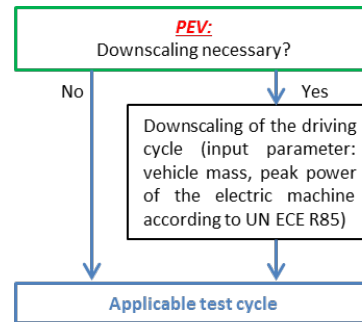
PEV: Mode Selectable Switch

Under discussion

Proposal for the mode selection – alternative solution (flow chart):

1. Step:
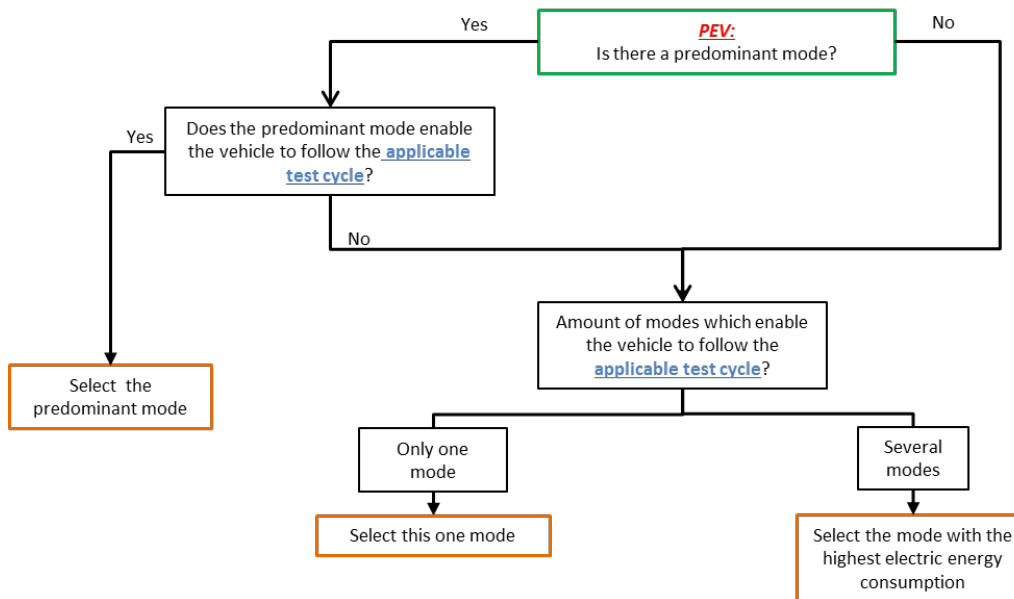
PEV:
Downscaling necessary?

No — Yes

Downscaling of the driving cycle (input parameter: vehicle mass, peak power of the electric machine according to UN ECE R85)

Applicable test cycle

2. Step:

Yes — PEV: Is there a predominant mode? — No

Does the predominant mode enable the vehicle to follow the applicable test cycle?

Yes — No

Select the predominant mode

Amount of modes which enable the vehicle to follow the applicable test cycle?

Only one mode — Several modes

Select this one mode

Select the mode with the highest electric energy consumption

PEV: Mode Selectable Switch

Under discussion

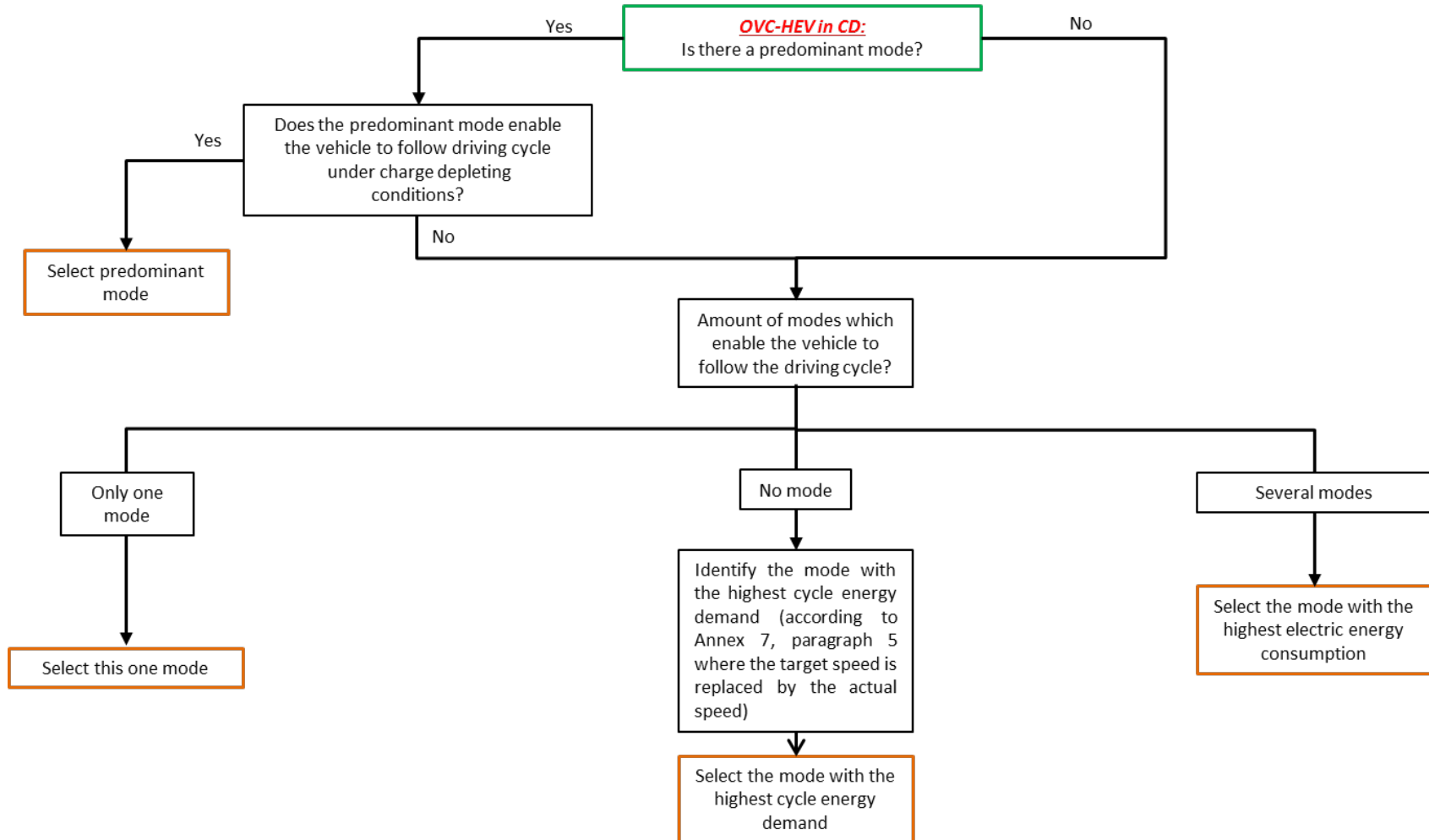**Proposal for the mode selection – alternative solution(text):**

For vehicles equipped with a driver-selectable operating mode:

1. If there is a predominant mode that does enable the vehicle to follow the **applicable test cycle** (within the speed trace tolerances according to Annex 6, paragraph 1.2.6.6.), this mode shall be selected.

2. If there is no predominant mode or if there is a predominant mode but the predominant mode does not enable the vehicle to follow the **applicable test cycle** (within the speed trace tolerances according to Annex 6, paragraph 1.2.6.6.), the test shall be performed by using a mode that enables the vehicle to follow **the applicable test cycle** (within the speed trace tolerances according to Annex 6, paragraph 1.2.6.6.).
    a. If this is a single mode, this mode shall be selected.
    b. If several modes are capable of following **the applicable test cycle** (within the speed trace tolerances according to Annex 6, paragraph 1.2.6.6.), the most electric energy consuming mode of those shall be selected.

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OVC in CD: Mode Selectable Switch

Under discussion

Proposal for the mode selection for the CD type 1 test – alternative solution (flow chart):

OVC in CD: Mode Selectable Switch

Under discussion

Proposal for the mode selection for the CD type 1 test – alternative solution (text):
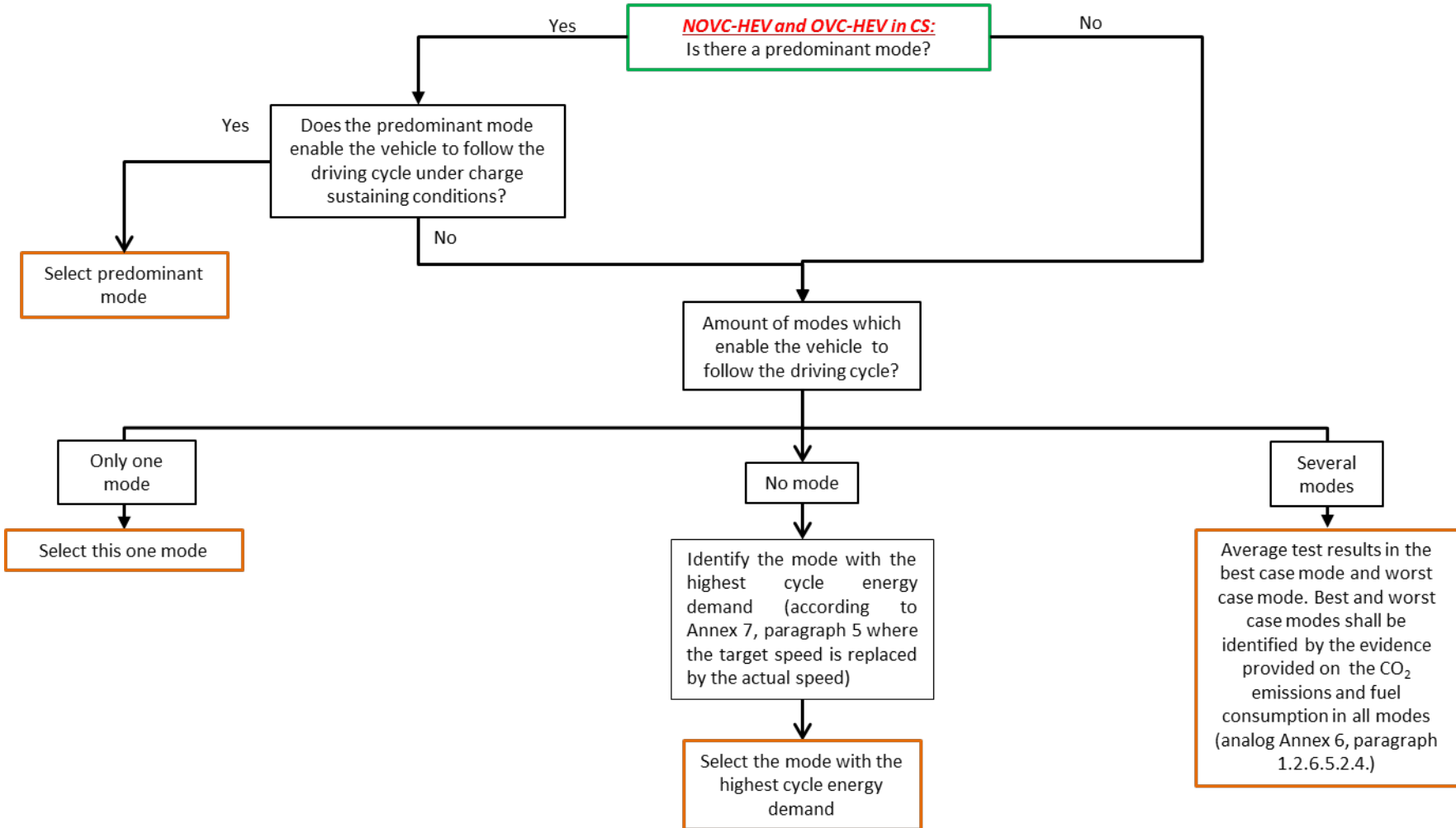
For vehicles equipped with a driver-selectable operating mode:

1. If there is a predominant mode that does enable the vehicle to follow the driving cycle (within the speed trace tolerances according to Annex 6, paragraph 1.2.6.6.) under charge depleting conditions, this mode shall be selected.

2. If there is no predominant mode or if there is a predominant mode but the predominant mode does not enable the vehicle to follow the driving cycle (within the speed trace tolerances according to Annex 6, paragraph 1.2.6.6.) under charge depleting conditions, the test shall be performed by using a mode that enables the vehicle to follow the applicable test cycle (within the speed trace tolerances according to Annex 6, paragraph 1.2.6.6.).
   a. If this is a single mode, this mode shall be selected
   b. If several modes are capable of following the driving cycle (within the speed trace tolerances according to Annex 6, paragraph 1.2.6.6.), the most electric energy consuming mode of those shall be selected
   c. If no mode enables the vehicle to follow the driving cycle (within the speed trace tolerances according to Annex 6, paragraph 1.2.6.6.), the mode with the highest cycle energy demand (according to Annex 7, paragraph 5 where the target speed is replaced by the actual speed) shall be selected.

OVC in CS: Mode Selectable Switch

Under discussion

Proposal for the mode selection for the CS type 1 test – alternative solution (flow chart):

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                                    ┌─────────────────────────────┐
                          Yes       │ NOVC-HEV and OVC-HEV in CS:  │    No
                    ┌───────────────│ Is there a predominant mode? │──────────────┐
                    │               └─────────────────────────────┘              │
                    ▼                                                             │
        ┌─────────────────────────┐                                              │
   Yes  │ Does the predominant mode│                                             │
 ┌──────│ enable the vehicle to    │                                            │
 │      │ follow the driving cycle │                                            │
 │      │ under charge sustaining  │                                            │
 │      │ conditions?              │                                            │
 │      └─────────────────────────┘                                            │
 │              No                                                              │
 ▼                                                                             │
┌──────────────┐                    ┌──────────────────────────┐              │
│ Select       │                    │ Amount of modes which    │◄─────────────┘
│ predominant  │                    │ enable the vehicle to    │
│ mode         │                    │ follow the driving cycle?│
└──────────────┘                    └──────────────────────────┘
```

Is there a predominant mode? (NOVC-HEV and OVC-HEV in CS)

- **Yes** → Does the predominant mode enable the vehicle to follow the driving cycle under charge sustaining conditions?
  - **Yes** → Select predominant mode
  - **No** → Amount of modes which enable the vehicle to follow the driving cycle?
- **No** → Amount of modes which enable the vehicle to follow the driving cycle?

Amount of modes which enable the vehicle to follow the driving cycle?

- **Only one mode** → Select this one mode
- **No mode** → Identify the mode with the highest cycle energy demand (according to Annex 7, paragraph 5 where the target speed is replaced by the actual speed) → Select the mode with the highest cycle energy demand
- **Several modes** → Average test results in the best case mode and worst case mode. Best and worst case modes shall be identified by the evidence provided on the CO_2 emissions and fuel consumption in all modes (analog Annex 6, paragraph 1.2.6.5.2.4.)

OVC in CS: Mode Selectable Switch

Under discussion

Proposal for the mode selection for the CS type 1 test – alternative solution (text):

For vehicles equipped with a driver-selectable operating mode:

1. If there is a predominant mode that does enable the vehicle to follow the driving cycle (within the speed trace tolerances according to Annex 6, paragraph 1.2.6.6.) under charge sustaining conditions, this mode shall be selected.

2. If there is no predominant mode or if there is a predominant mode but the predominant mode does not enable the vehicle to follow the driving cycle (within the speed trace tolerances according to Annex 6, paragraph 1.2.6.6.), the charge-sustaining test shall be performed by using a mode that enables the vehicle to follow the driving cycle (within the speed trace tolerances according to Annex 6, paragraph 1.2.6.6.).
   a. If this is a single mode, this mode shall be selected
   b. If there are several modes, test results shall be measured and averaged in the best case mode and worst case mode. Best and worst case modes shall be identified by the evidence on the CO_2 emissions and fuel consumption in all modes (analog Annex 6, paragraph 1.2.6.5.2.4.)
   c. If no mode enables the vehicle to follow the driving cycle (within the speed trace tolerances according to Annex 6, paragraph 1.2.6.6.), the mode with the highest cycle energy demand (according to Annex 7, paragraph 5 where the target speed is replaced by the actual speed) shall be selected.

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