

Scenarios for AC coupling setups at 1909 Franwall

Several scenarios are displayed

Simple	a simple “parallel” system
Typical	the typical AC coupling scenario
Proposed	proposed “switched” AC coupling scenario “switching modes” P1 to P5
Modified	modification to above “switched” system, using simple inverter (no backflow permitted) “switching modes” M1 to M3

Various breakers are not shown. Wiring (neutral, ground, etc) is not shown
The “modified” scenario is somewhat new, it is not discussed in the earlier memo.
It uses a trick that requires that one can tap into AC power from the GTI in a manner
that is isolated from backfeed power from the inverter..
If this is not possible, the trick only works if residents are vary diligent about turning
charger off when PV panels are not producing.

Key ..

CBP: central breaker panel

PV-enp: PV panels connecting to CBP using microinverters, or a separate GTI

PV: photovoltaic panels (ie; Helios 260W)

GTI: grid tie inverter (2kw)

INV: standard inverter. AC and DC input, AC output; no backfeed into out (no charger) (2kw)

OGI: off grid inverter capable of AC coupling (2kw)

OGI TS: automatic transfer switch in OGI (prevents backfeed from OGI to CBP during outages)

BOX: a junction box, to connect GTI, OGI, and GTS.

3way: 3 way transfer switch. 3 inputs: generator, CBP, GTI. One output (to charger). So charger has choice of 3 inputs

Switch: manual transfer switch, to select GTI to either CBP or BOX

main

Output to CBP

sub

Output to BOX/GTS

GTS: existing generator transfer switch, Includes 10 breakers

Gen

Generator input to GTS

Main

Main (CBP) input to GTS



Bidirectional flow



Unidirectional flow



Unidirectional flow, with status feedback



Line not being used

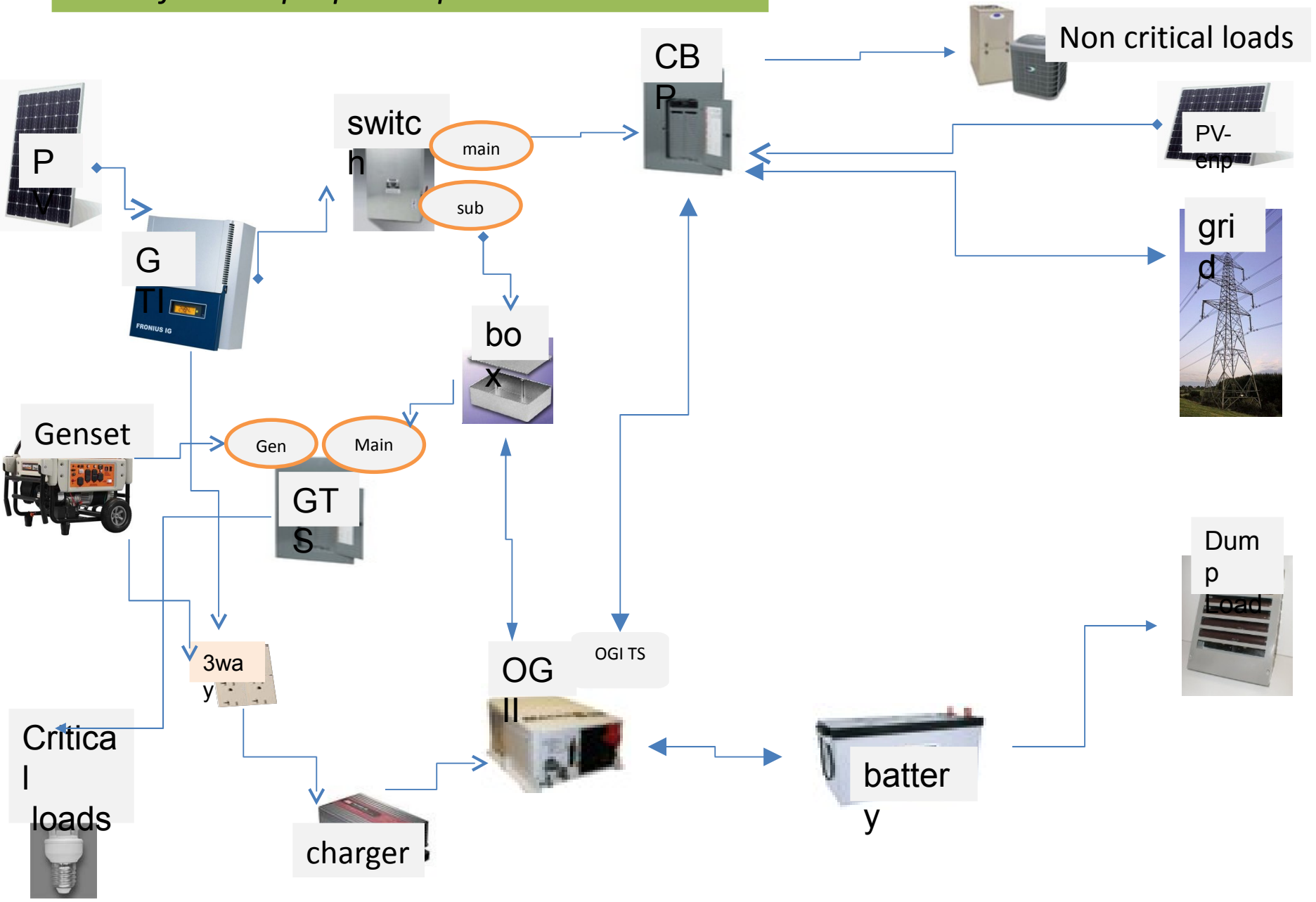


Line available but not typically used

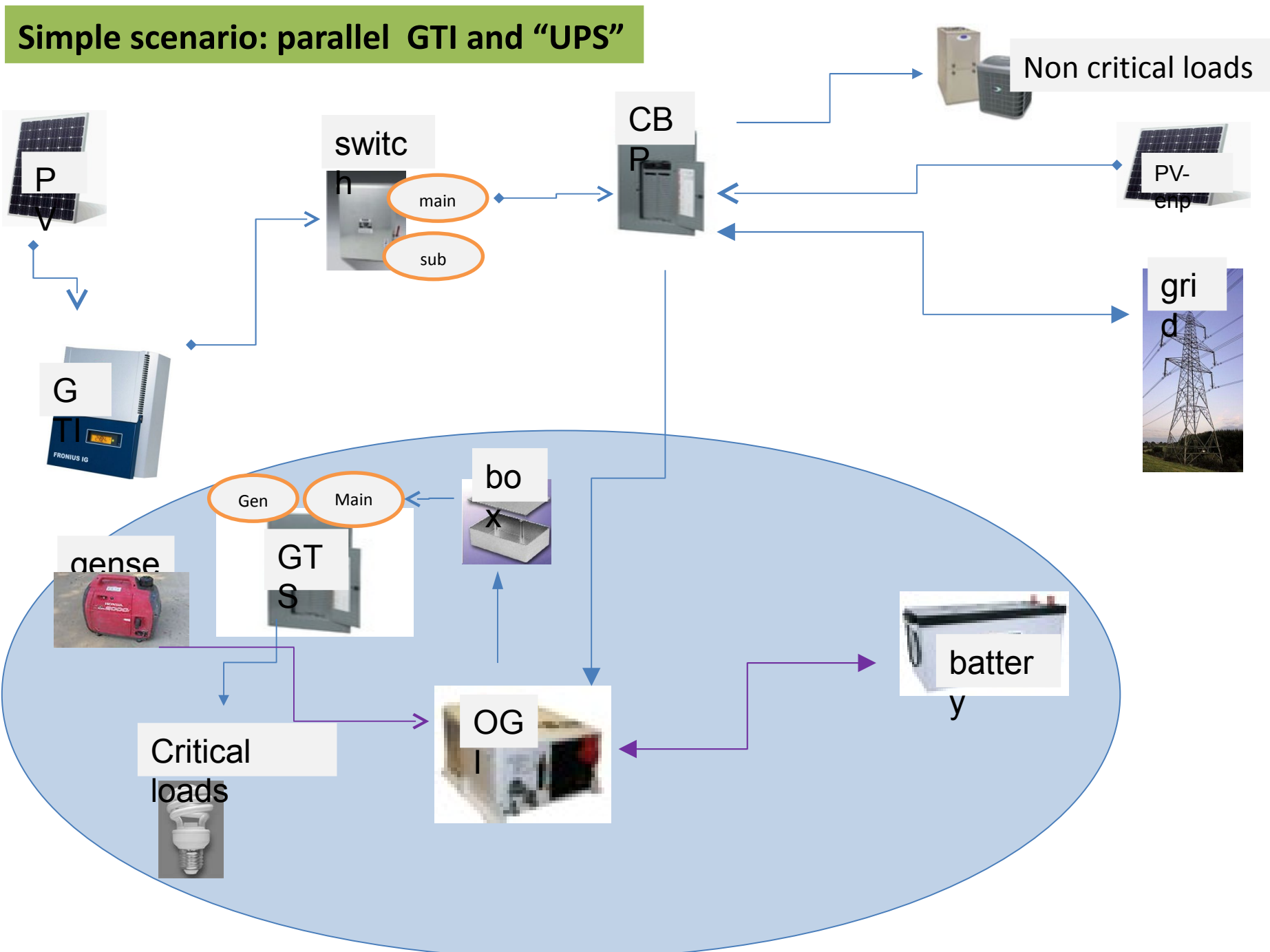
Genset2: Honda EU2000 1.6kw

Genset5: Generac 6.5kw

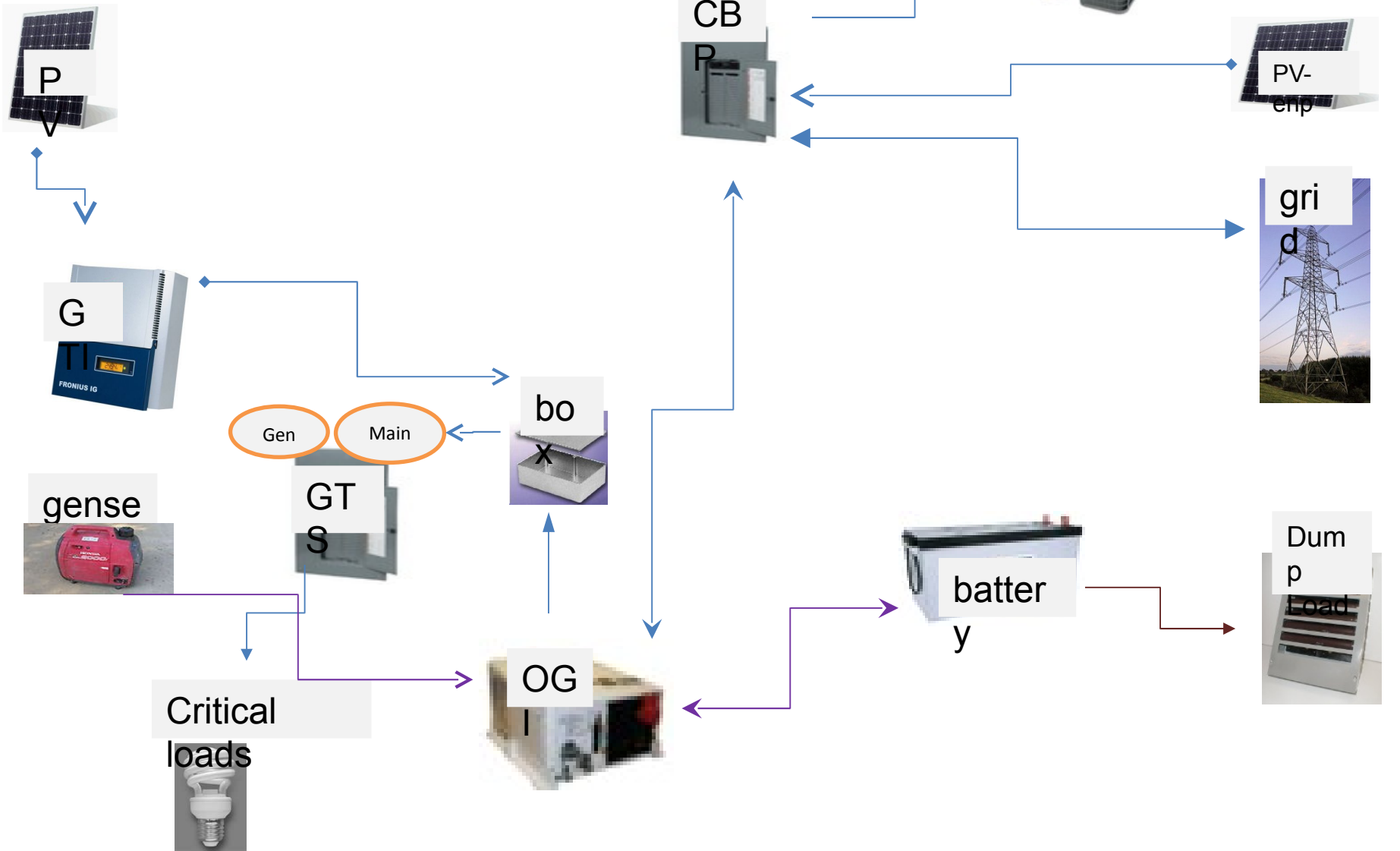
For reference purposes: possible connections



Simple scenario: parallel GTI and "UPS"



Typical scenario: AC coupling



Switching modes for the proposed scenario

(P1) normal times

Switch->main, GTS->main

(P2) grid down

Switch->sub, GTS->main

(P3) grid down, generator supplement

Switch->sub, GTS->main, GENSET2 running

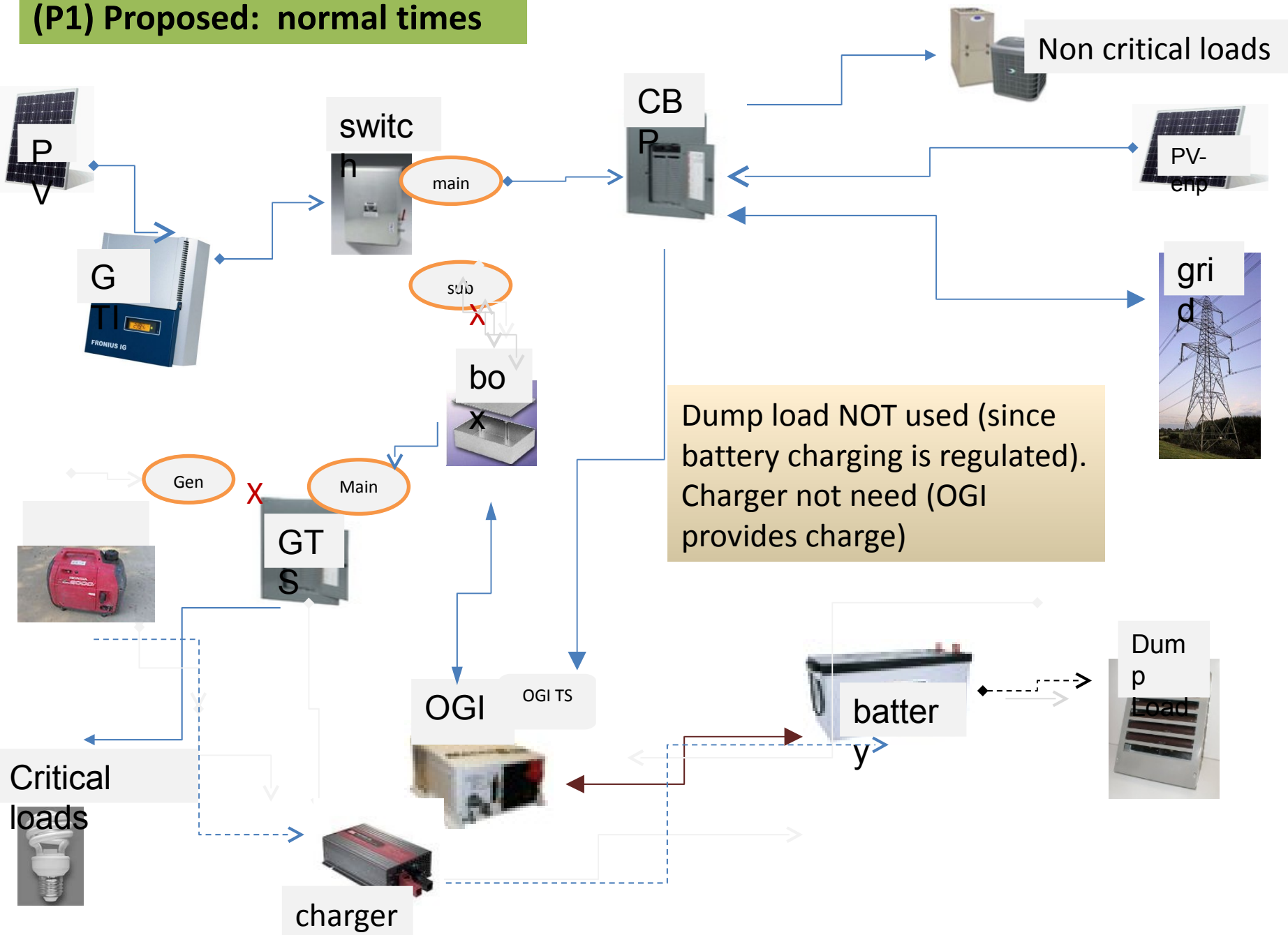
(P4) grid down, generator supplement (alternate)

Switch->sub, GTS->main, GENSET2 running

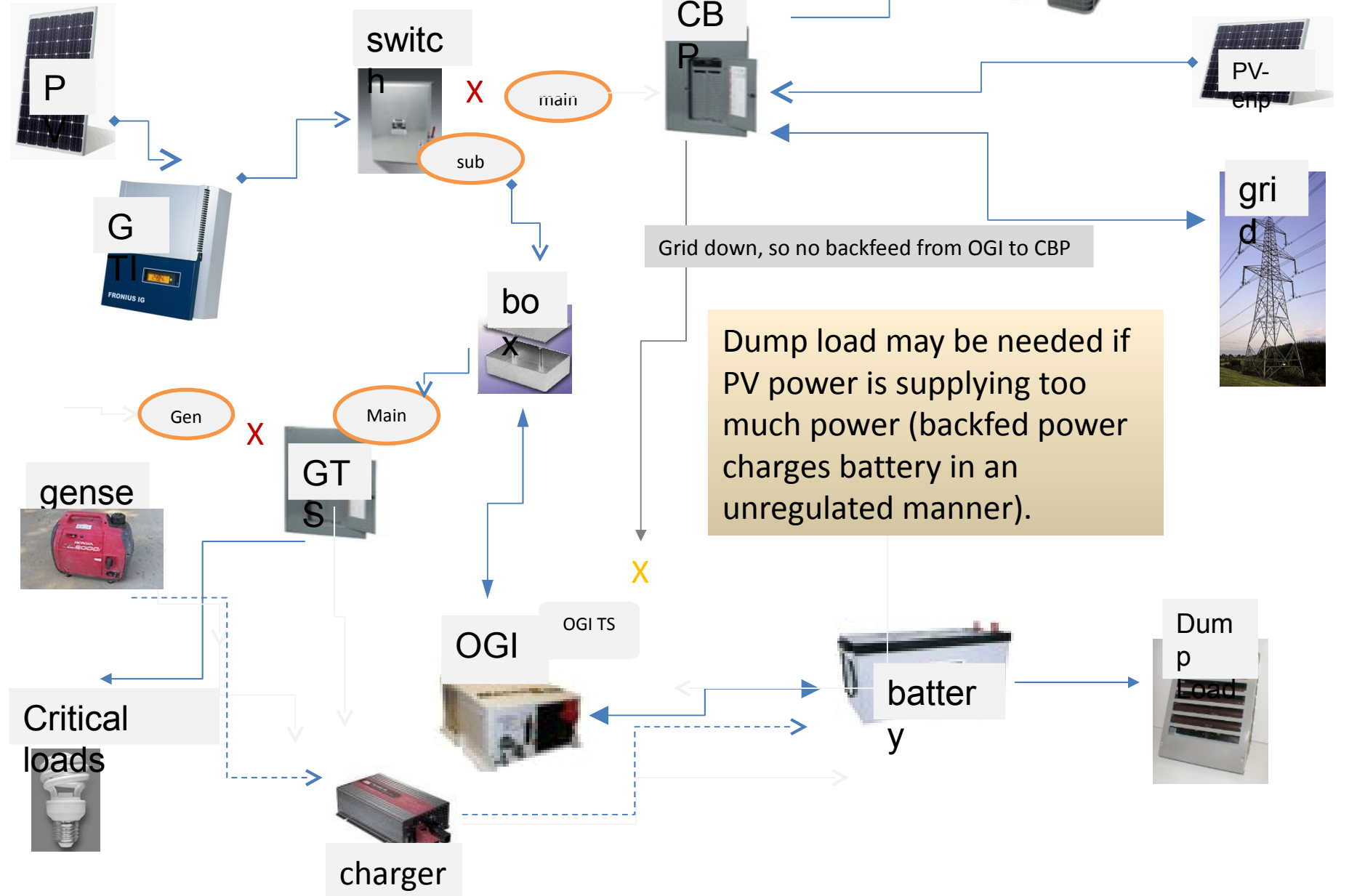
(P5) generator only no pv charging

Switch->main, GTS->GEN, GENSET5 running

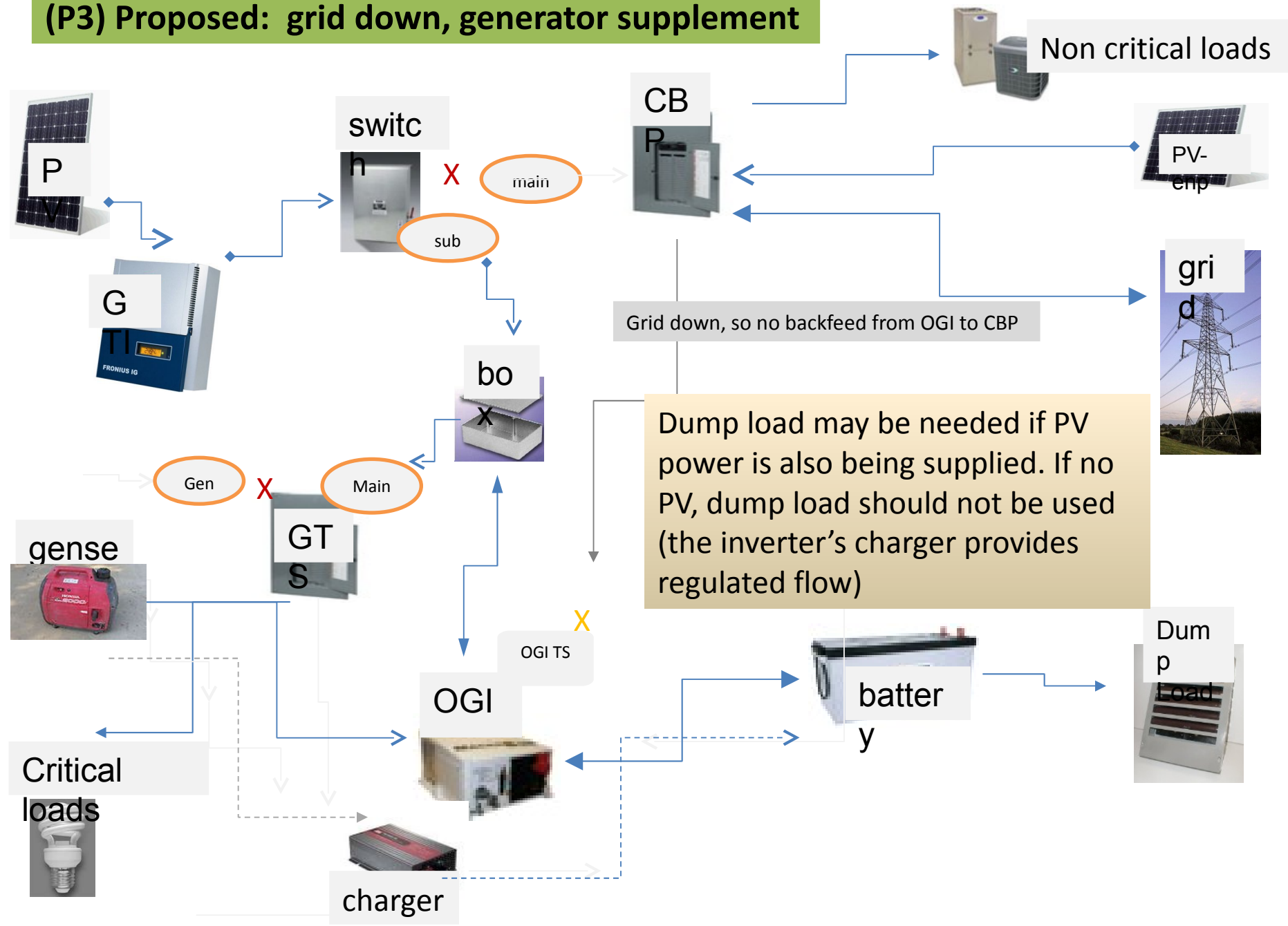
(P1) Proposed: normal times



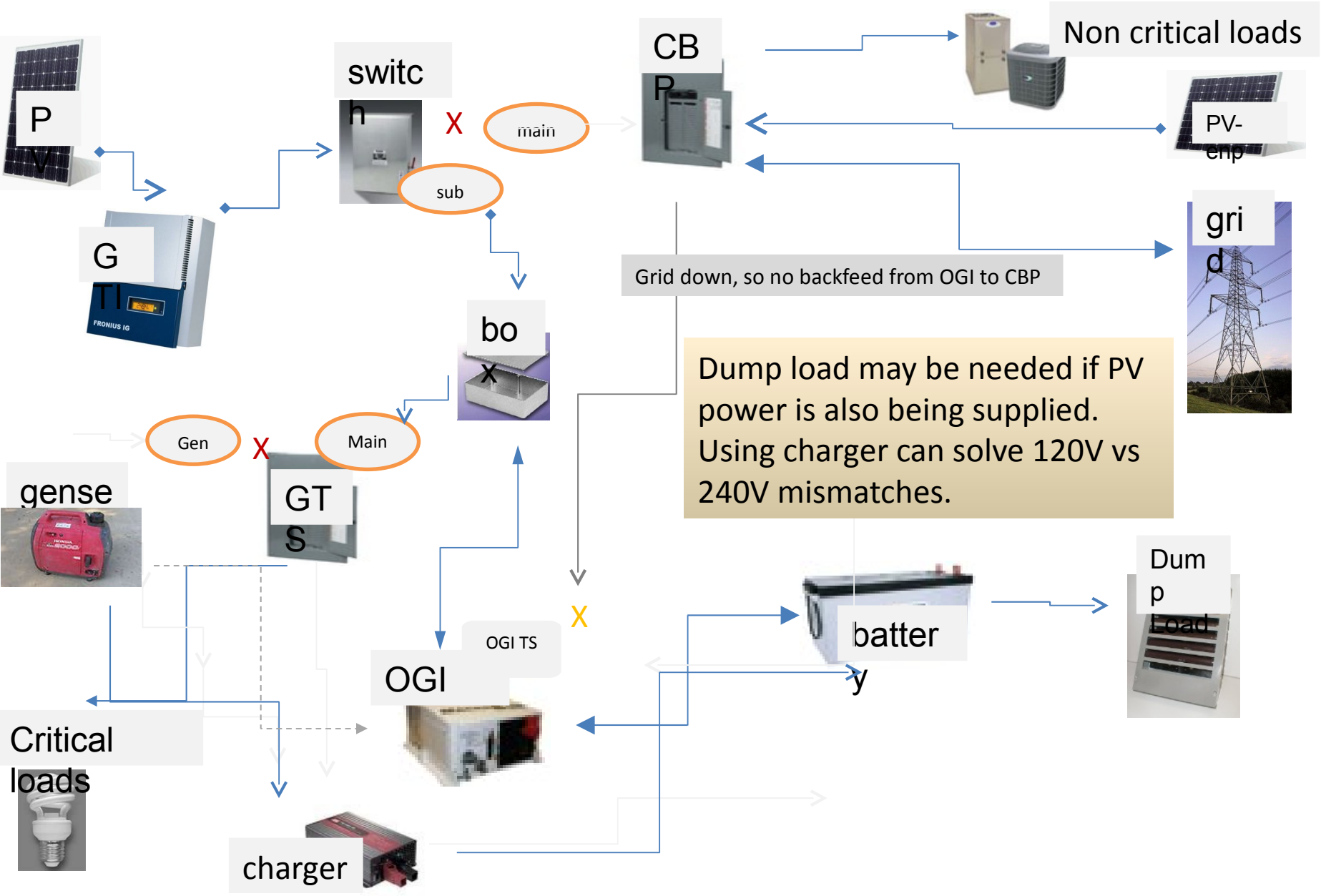
(P2) Proposed: grid down



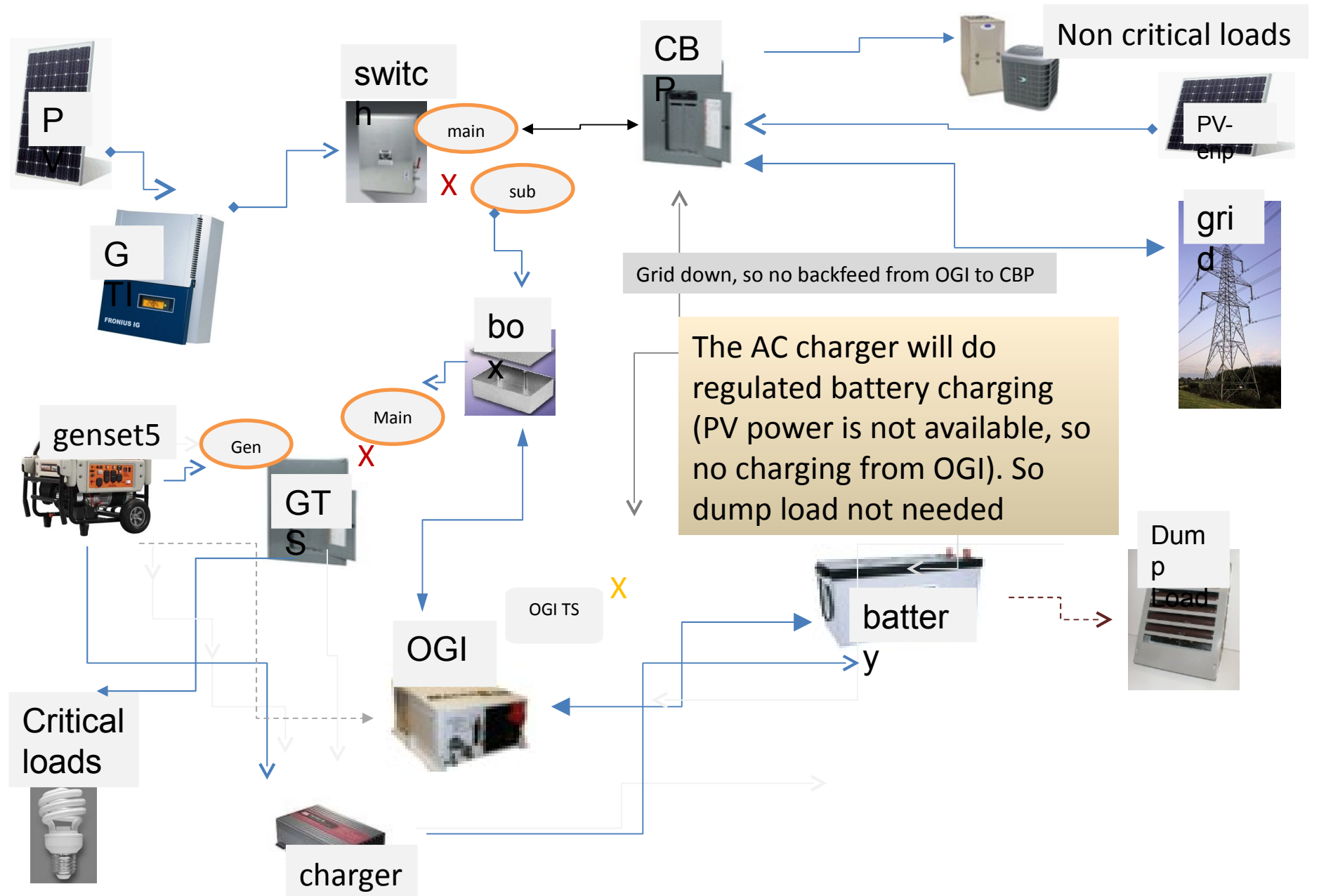
(P3) Proposed: grid down, generator supplement



(P4) Proposed: grid down, generator supplement (alternate)



(P5) Proposed: large generator only



Modified proposal

(M1) Normal times

Switch->main, GTS->main, 4way->CBP

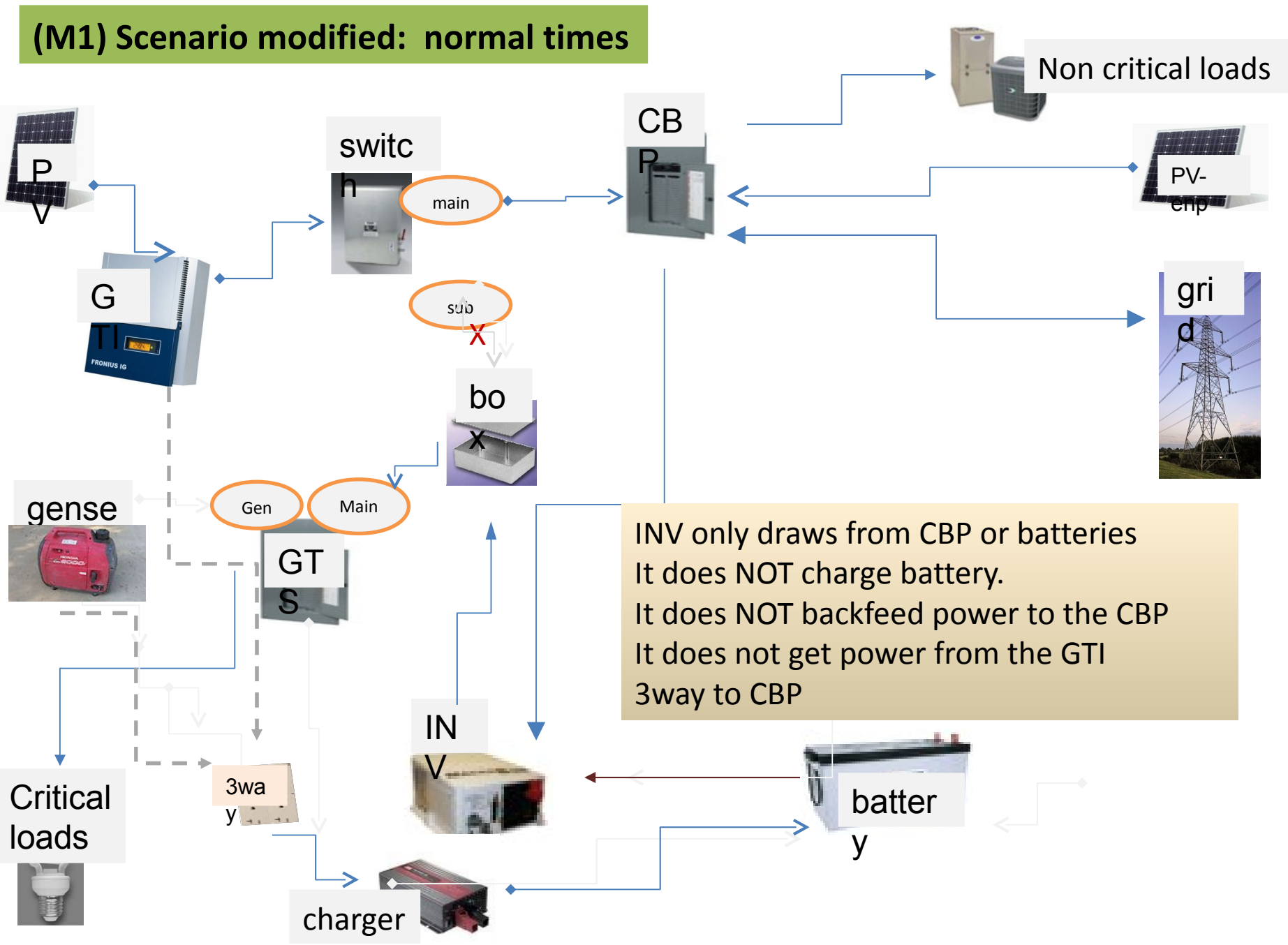
(M2) Grid down

Switch->sub, GTS->main, 4way->GTI

(M3) Scenario standard: grid down, generator supplement

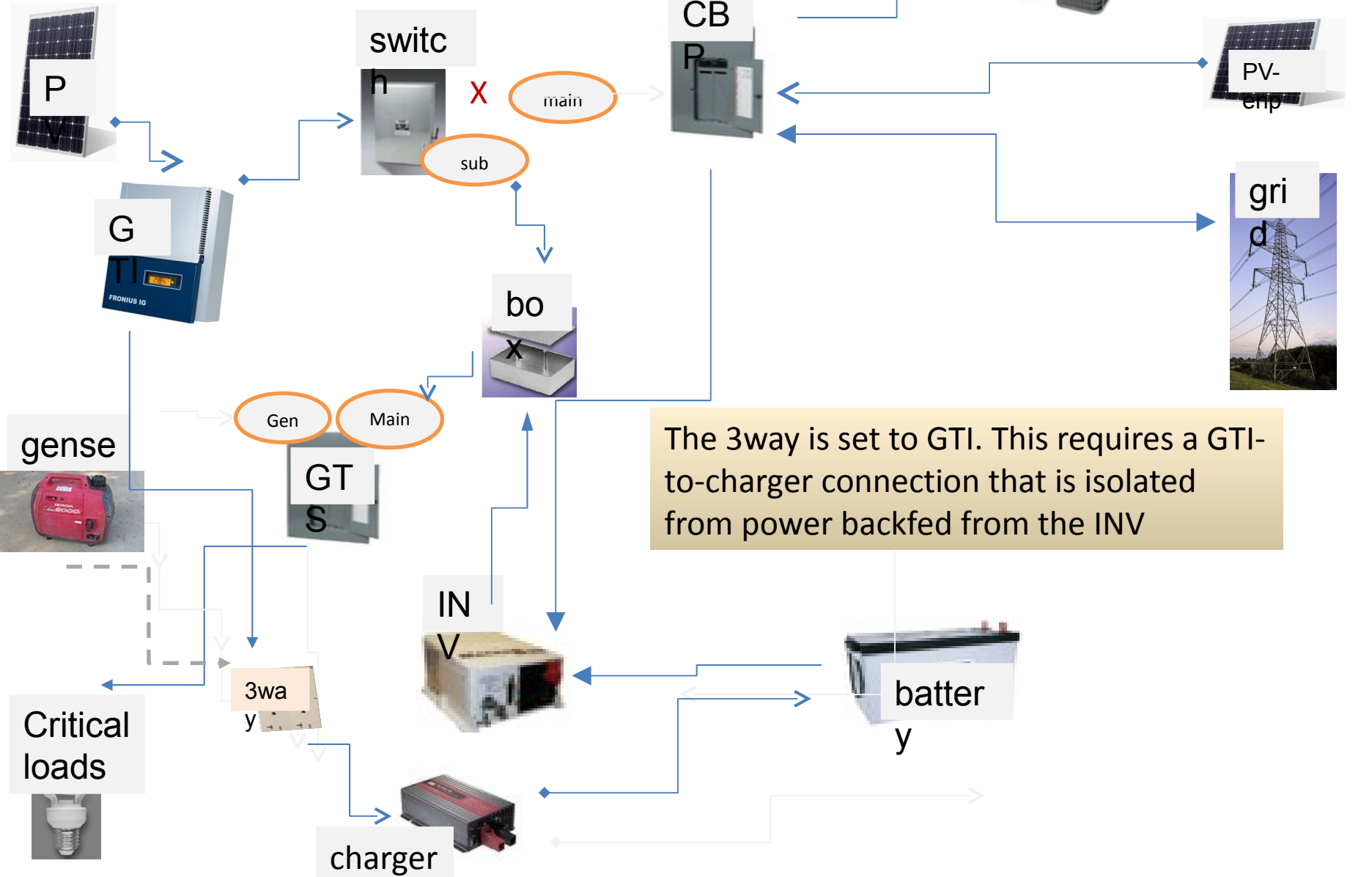
Switch->sub, GTS->main, 4way->GENSET2

(M1) Scenario modified: normal times



INV only draws from CBP or batteries
It does NOT charge battery.
It does NOT backfeed power to the CBP
It does not get power from the GTI
3way to CBP

(M2) Scenario modified: grid down



(M3) Scenario modified: grid down, small generator supplement

