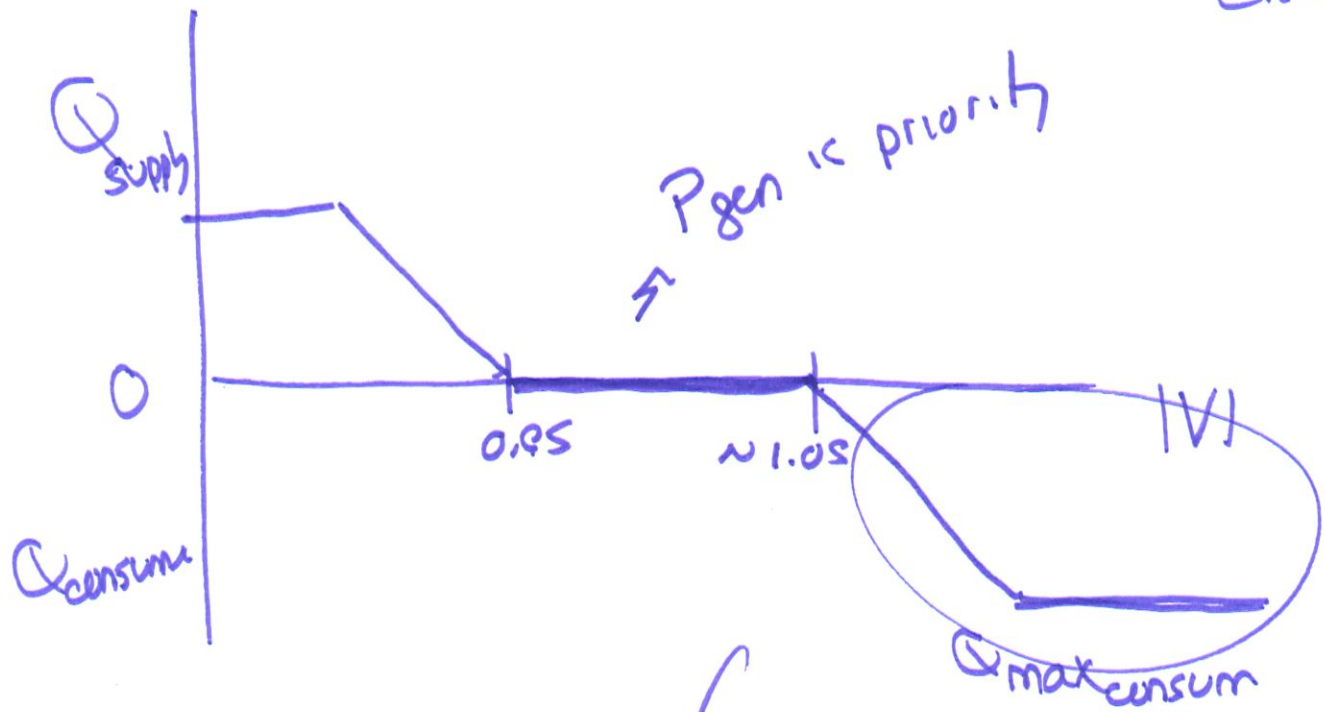
University of Idaho

ECE 529
Utility Applications of Power Electronics

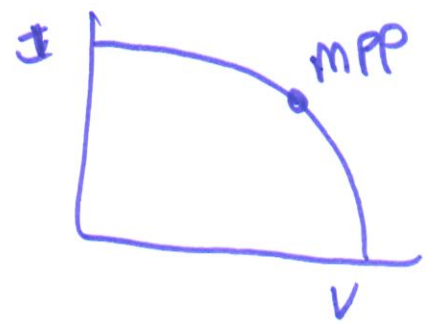
Session 29

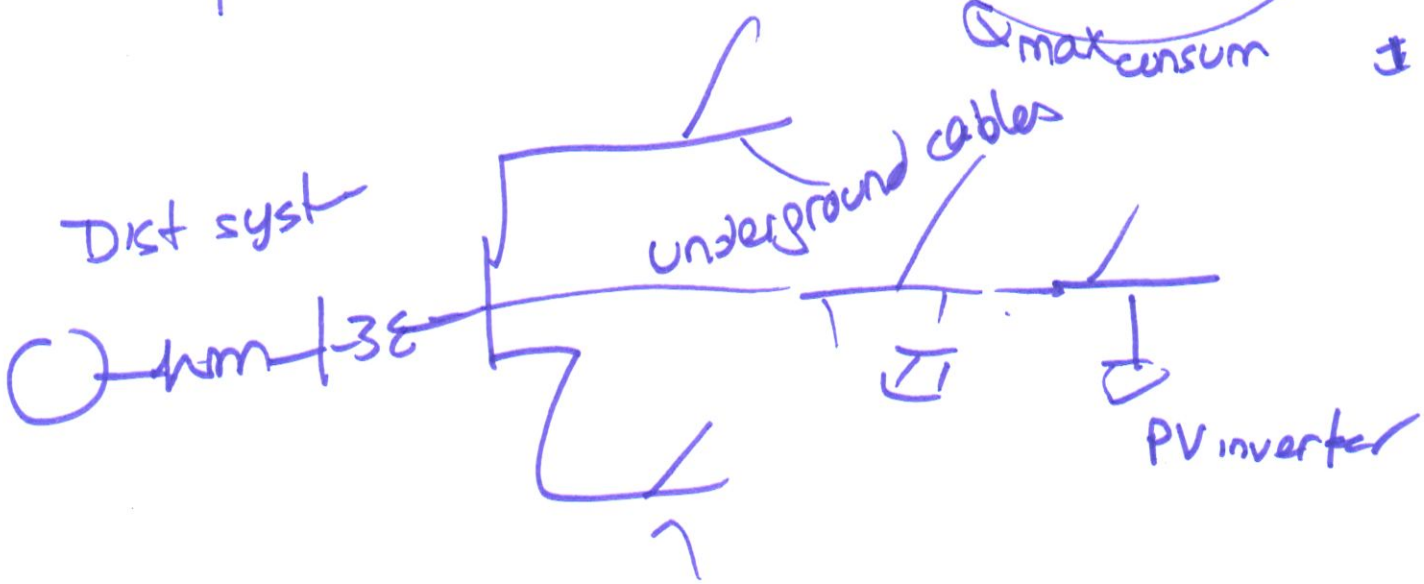
University of Idaho

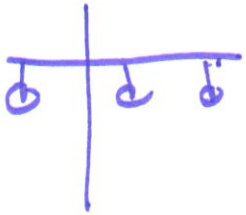
Alternate voltage support (more common in distribution)

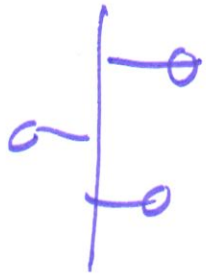


Priority to VARs









$$L_1' = \frac{\mu_0}{2\pi} \ln \frac{D_m}{R'}$$

conductor GMR

Cable: $D_m \downarrow$

compared to OHL

$L' \downarrow$

$C' \uparrow$

$$C_1' = \frac{2\pi \varepsilon_0 \varepsilon_r}{\ln\left(\frac{D_m}{r}\right)}$$

no longer 1 for a cable

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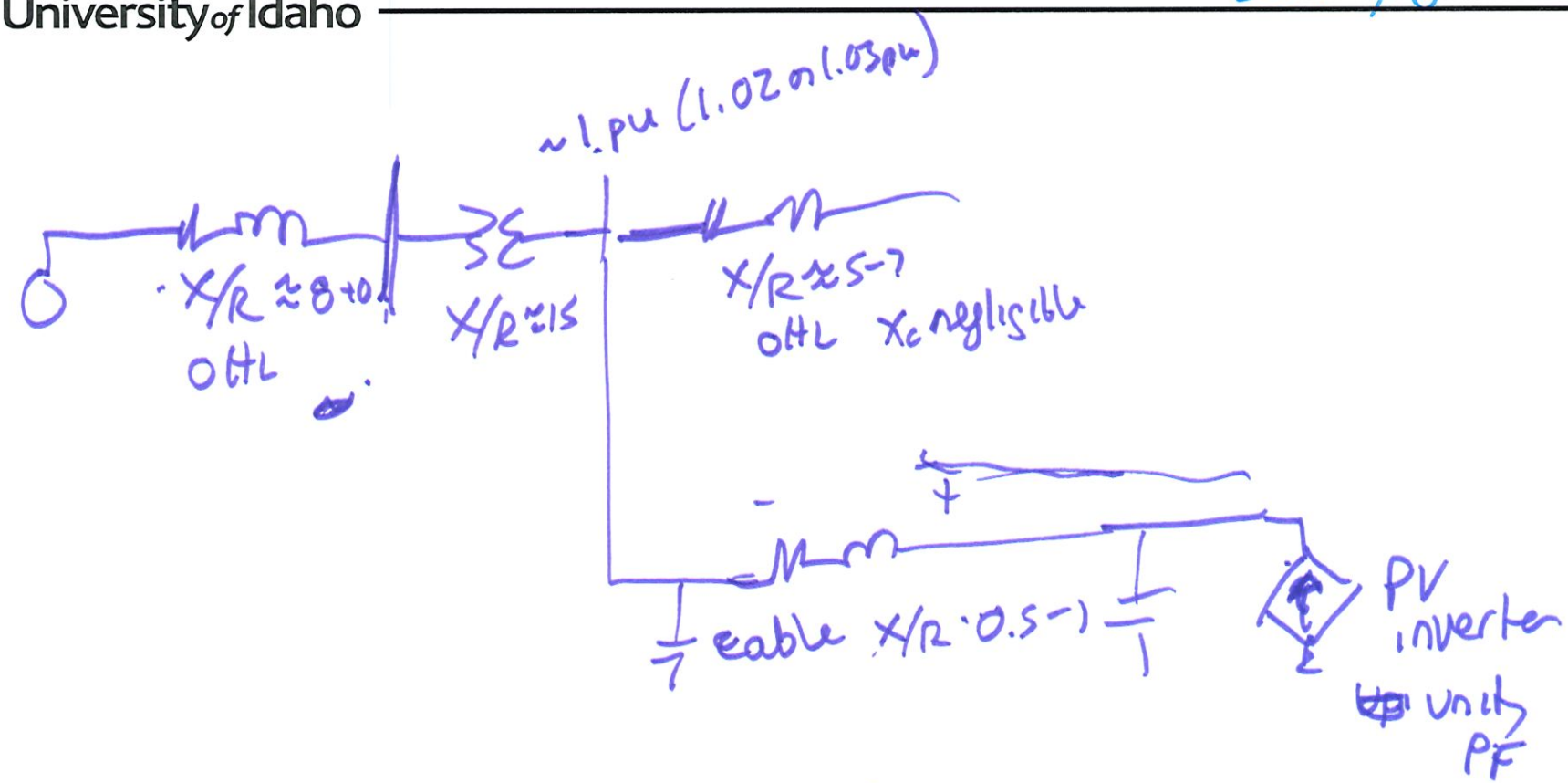
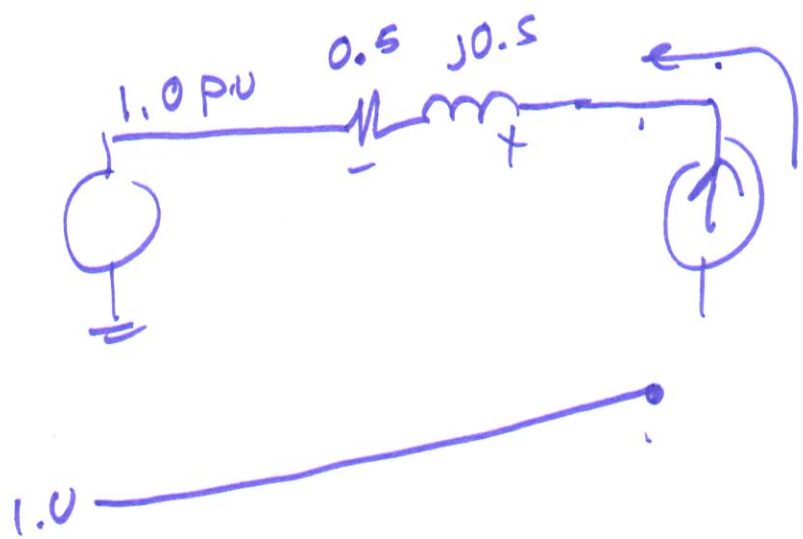

~1.pu (1.02 or 1.03pu)
X/R ≈ 8+0j
OHL
X/R ≈ 15
X/R ≈ 5-7
OHL Xc negligible
cable X/R ≈ 0.5-1
PV inverter
unity PF


1.0 pu
0.5
j0.5
1.0

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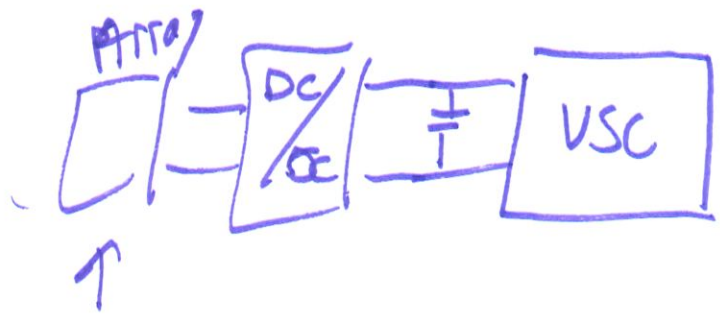
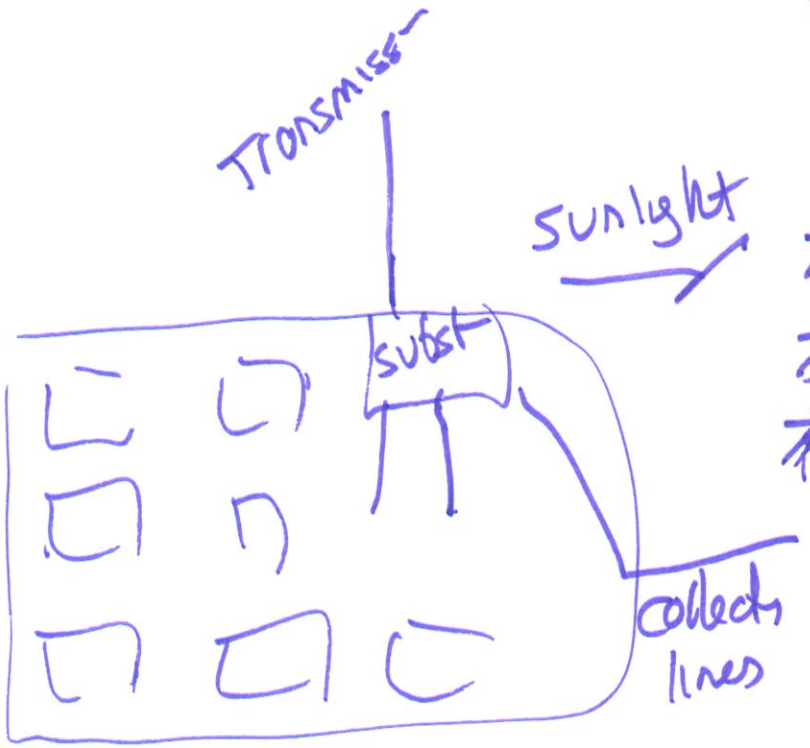
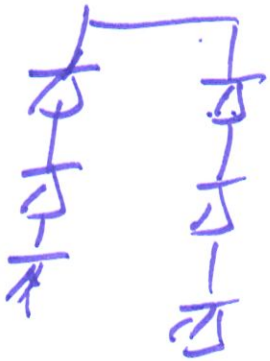
→ modeling PV inverters, WT etc

→ output of real power depends on:

PV:





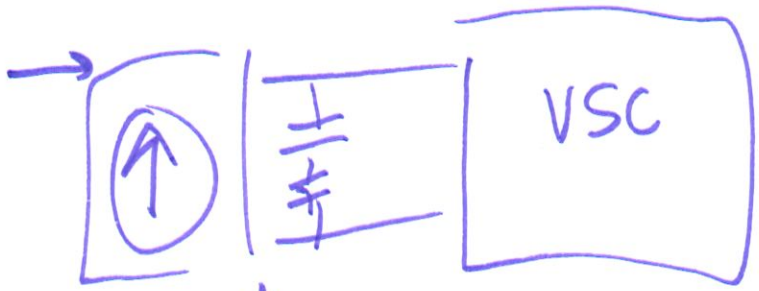


equivalent model

what is goal for study

- single or multiple inverters represent a large number

- How represent impact of solar resource/wind resource?



current injector - model changes in current

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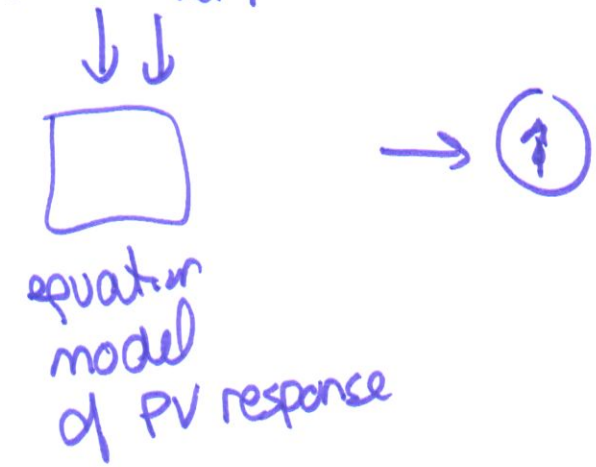
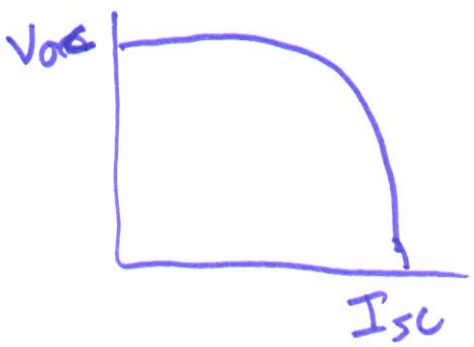
insolation Temp





model specific sunlight conditions or changes in sunlight

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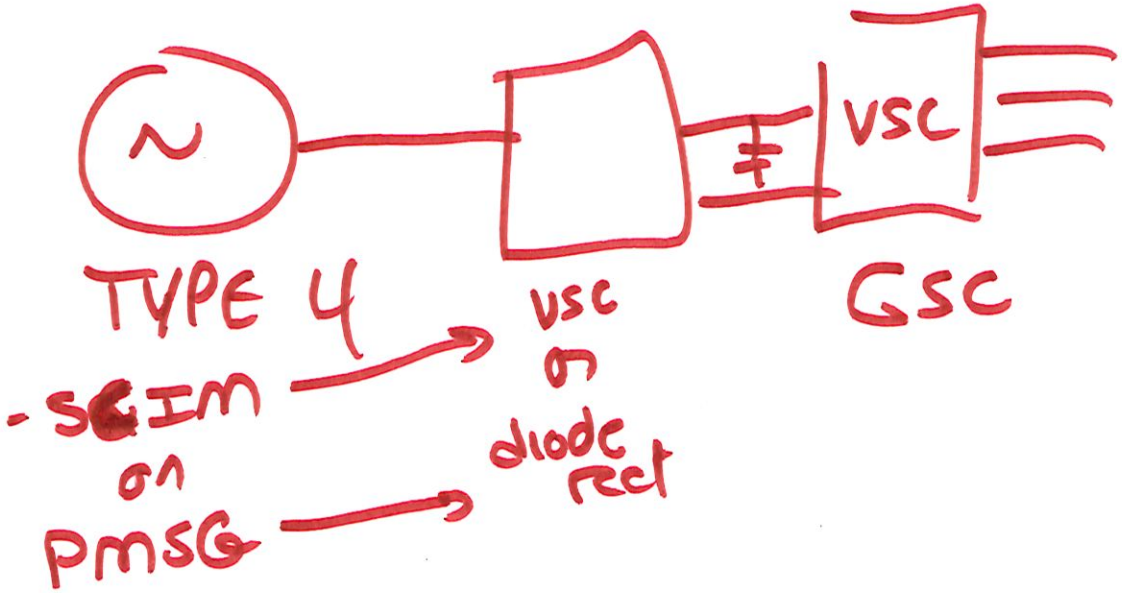
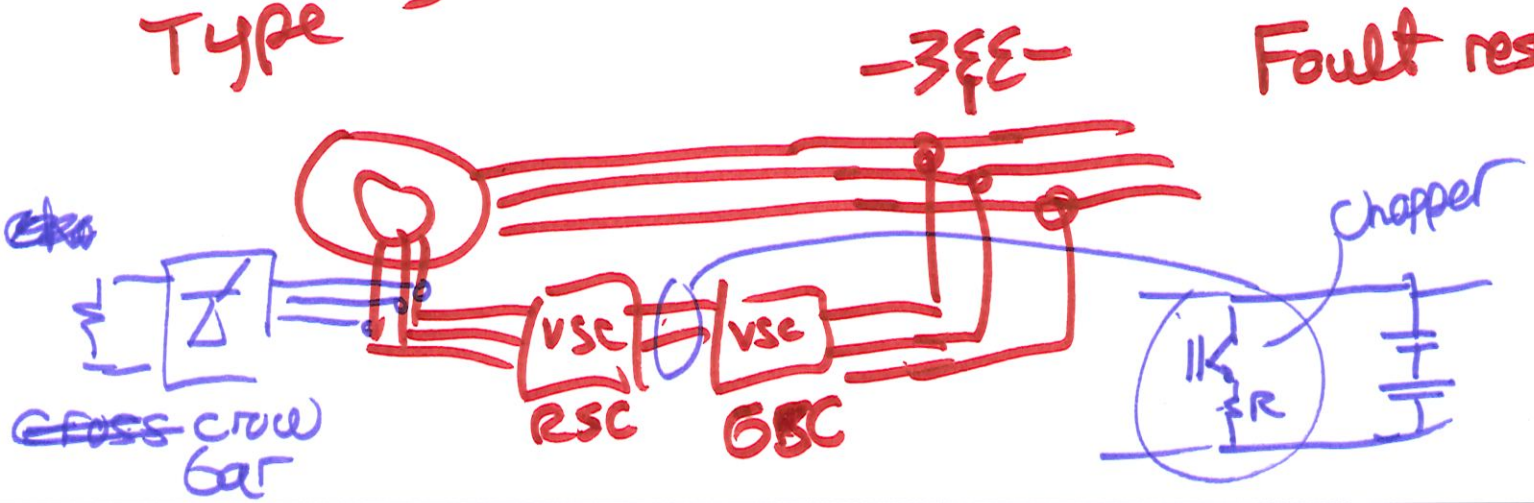
WT



Type 3



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- Outer controls
  - → Representing momentary cessation for wind & esp PV
  - → If P output ceases to do Max Power Point Tracking
    - when, why, how model