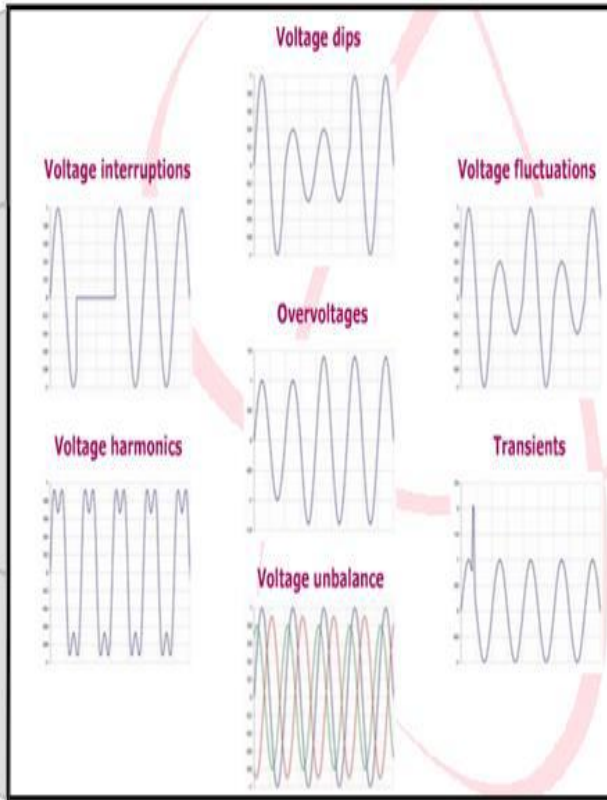
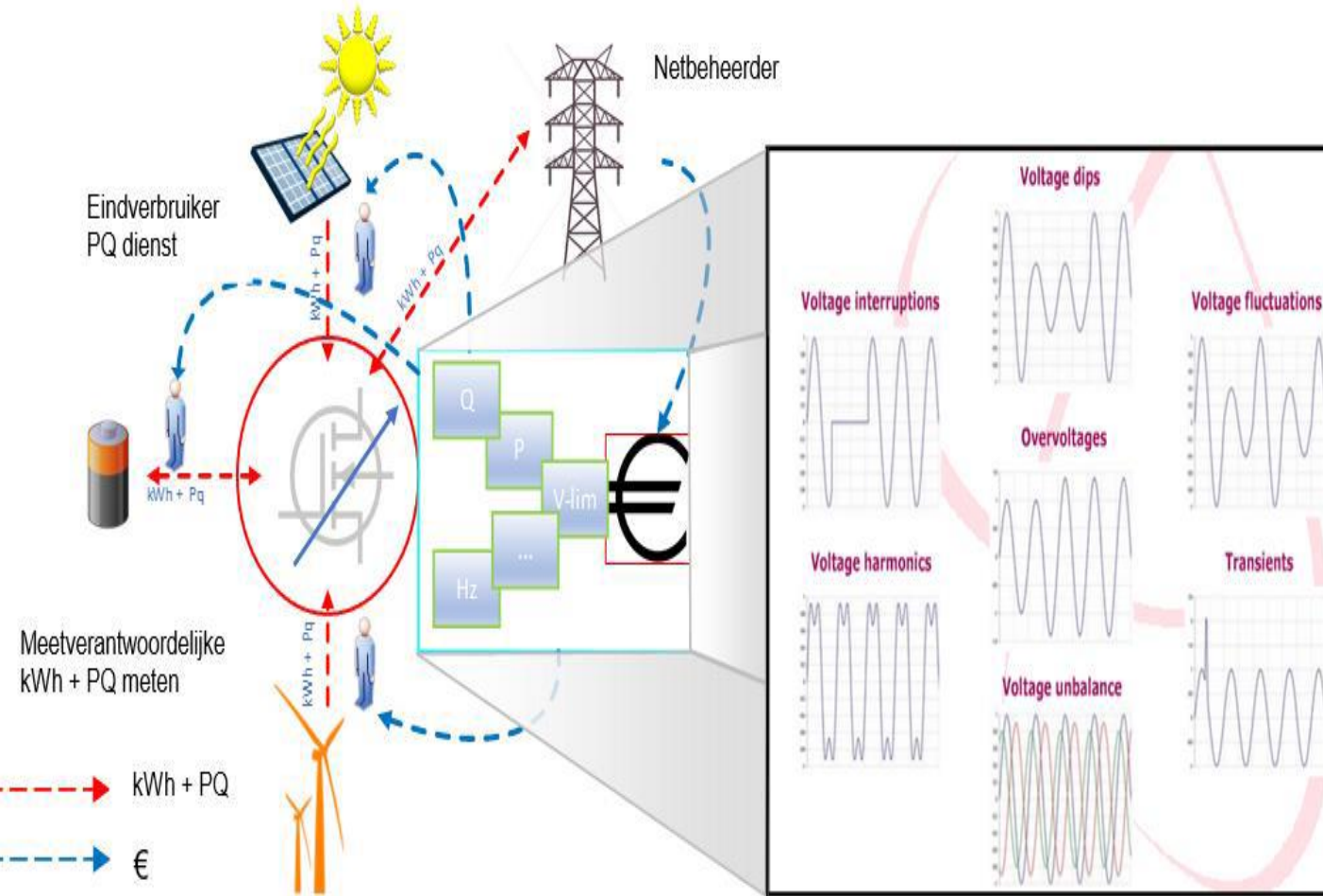


# Blind sturen op de spanning in de onderwereld



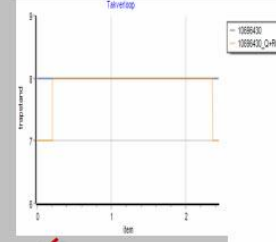
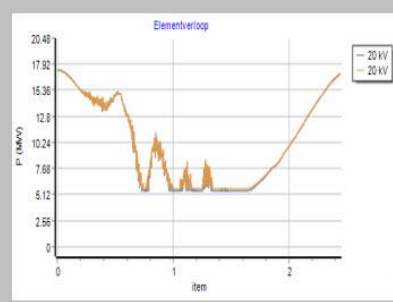
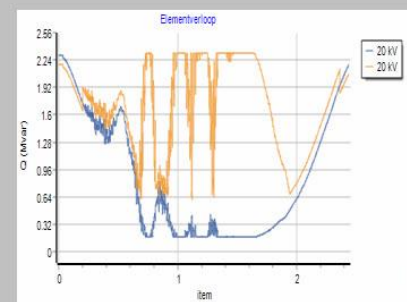
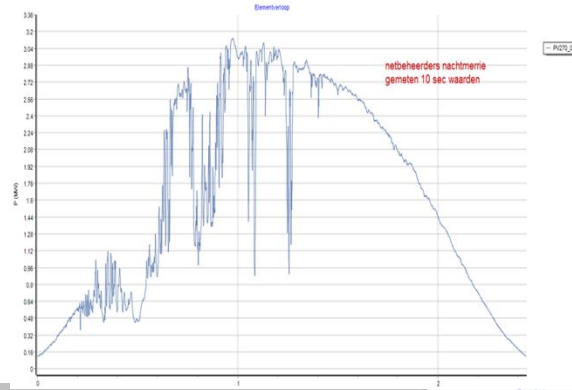
De onderwereld van kabels en leidingen



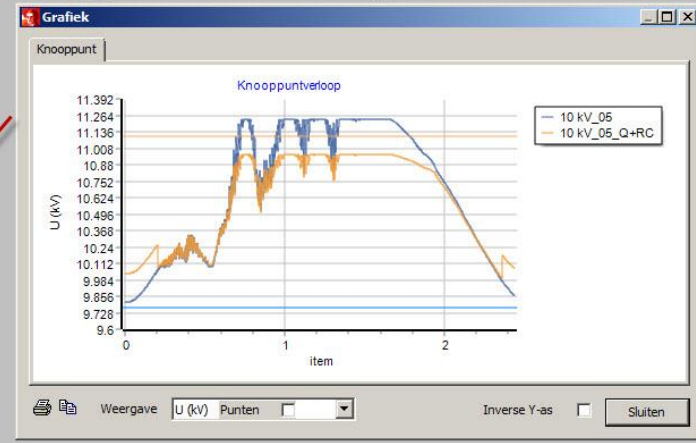
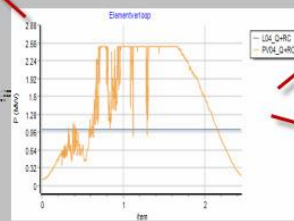
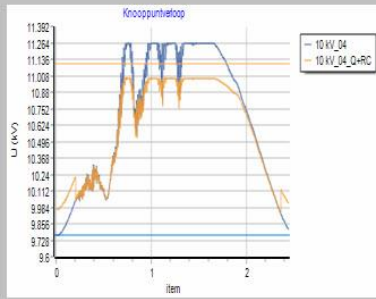
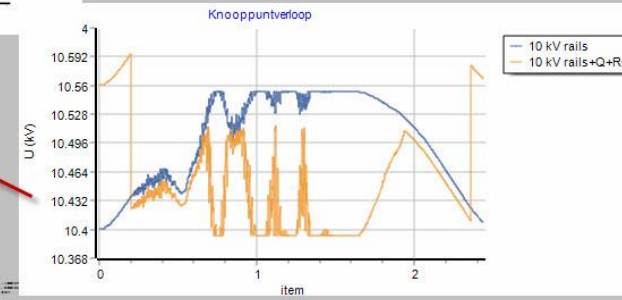
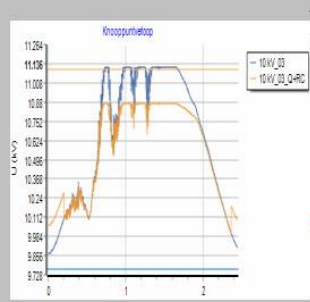
# Zon op infra

Het probleem  
Te hoge en te lage spanningen

Deel oplossing  
Blindroom + vermogens reductie  
indien nodig



1.4 meer schakelingen  
2\* meer onderhoud aan trafo's

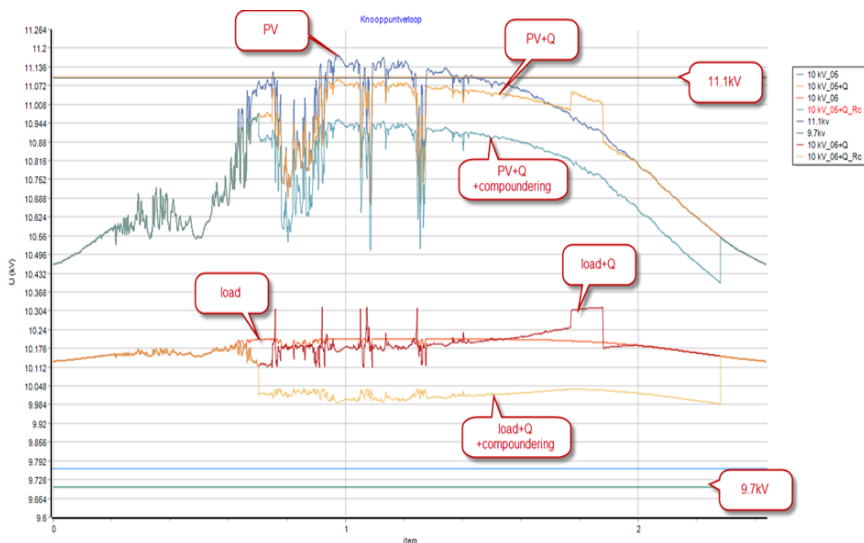
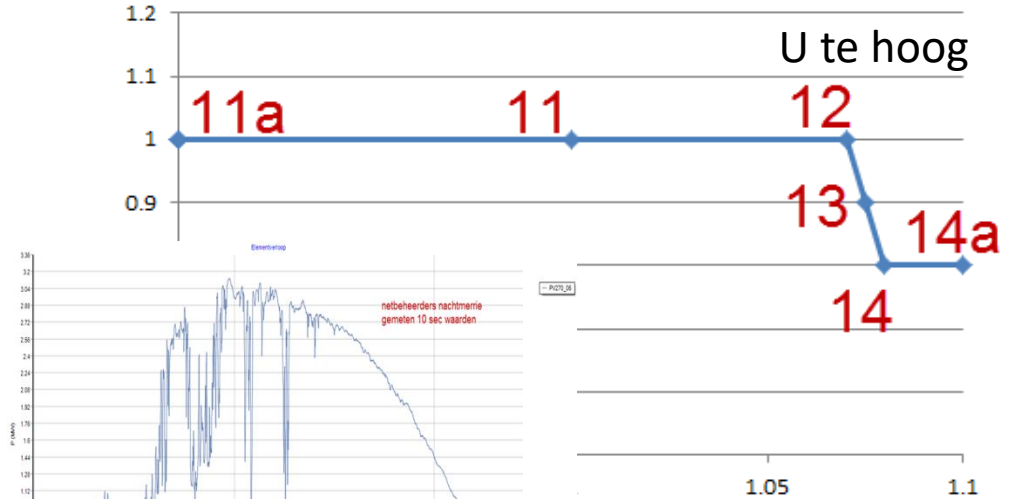
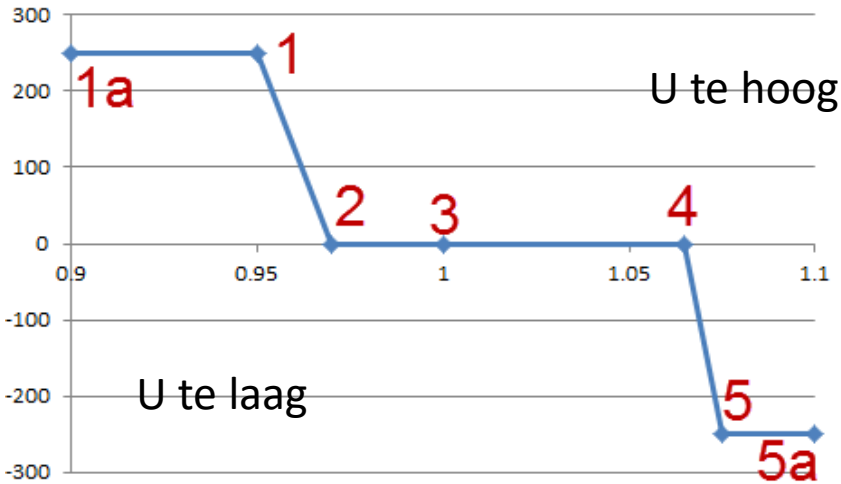


50% reductie (van Ppiek) = max 10% verlies

# Veld test Noordwolde

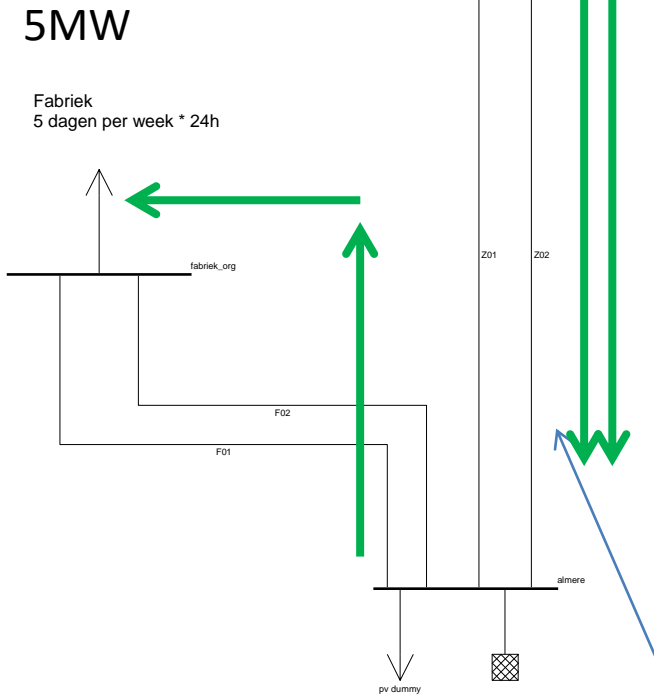
+ - Q afhankelijk van spanning +

-P afhankelijk van spanning (bij storing)



# Slimmer mogen aansluiten

34/20MW



5MW

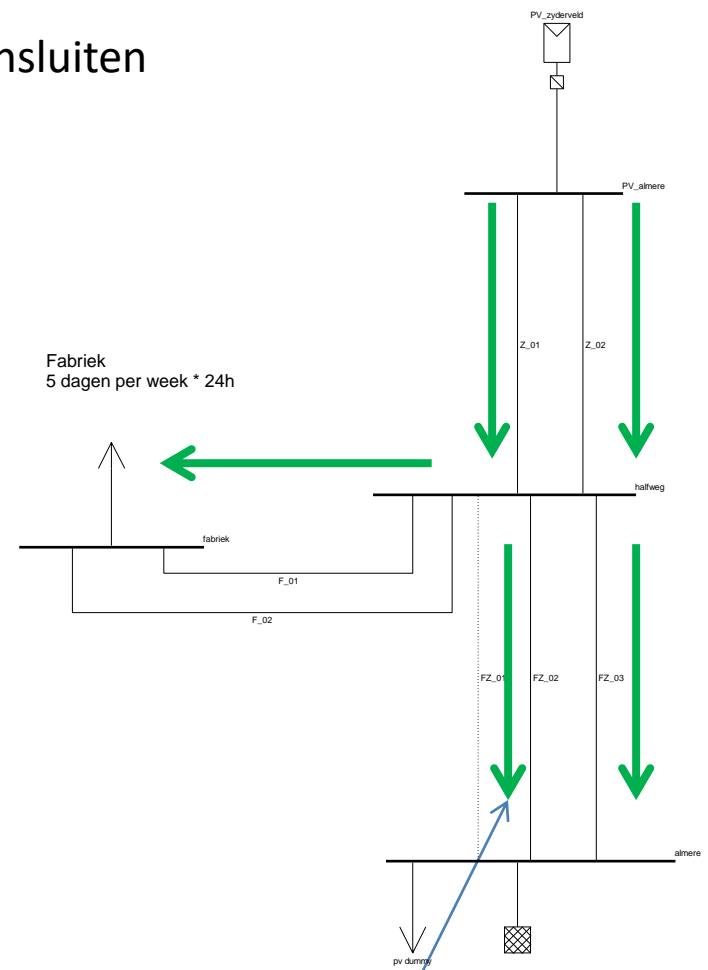
Fabriek  
5 dagen per week \* 24h

Netb	klant1	klant2
597k€		
	720k€	720k€
<hr/>		
412k€		
460k€	360k€	360k€

p verlies is  $20y * 24 * 365 * 0.0852MW * 40€/MWh = 597k€$   
 extrakabel =  $2 * 1500 * 120€ = +360k€$

alternatief  
 p verlies is  $20y * 24 * 365 * 0.0588MW * 40€/MWh = 412k€$   
 extrastation =  $+100k€$

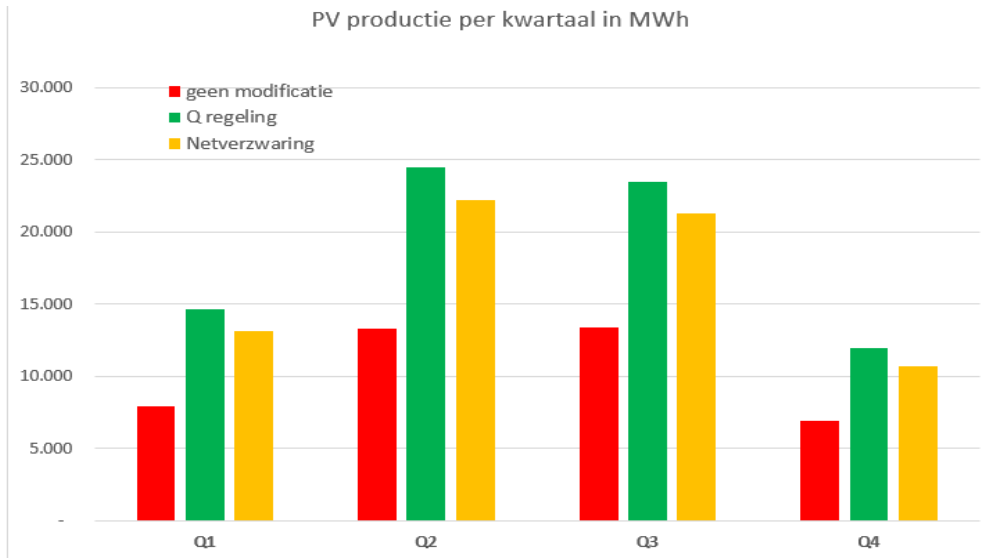
verschil(20y) =  $(597 - 412) + (360 - 100 * (1.04^20)) = 750k€$



Fabriek  
5 dagen per week \* 24h

2

# Wat levert het op



We kunnen bijna 2\* zoveel zon faciliteren ( regio marnezijsl)  
 10% van de opgewekte PV-kwh gaat op aan extra netverliezen

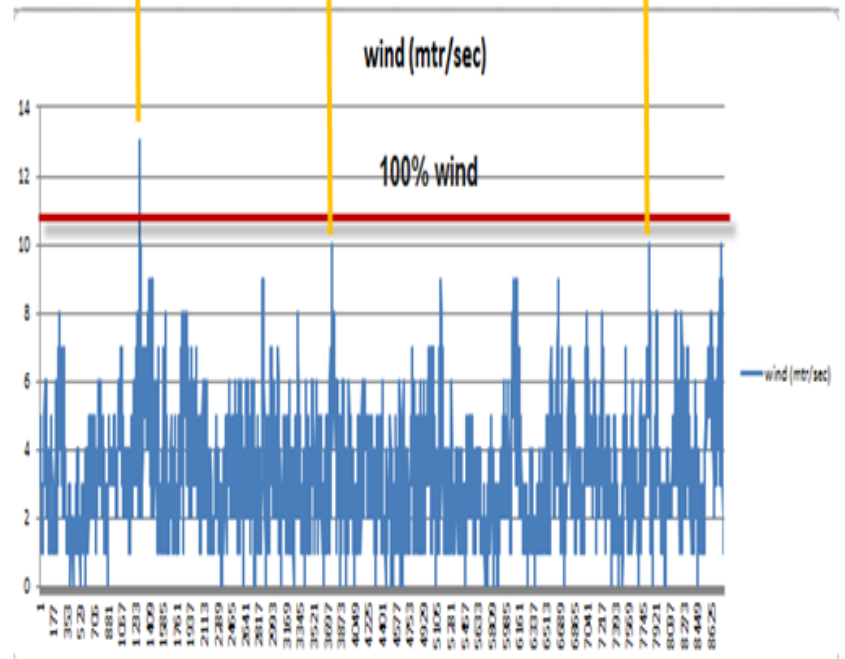
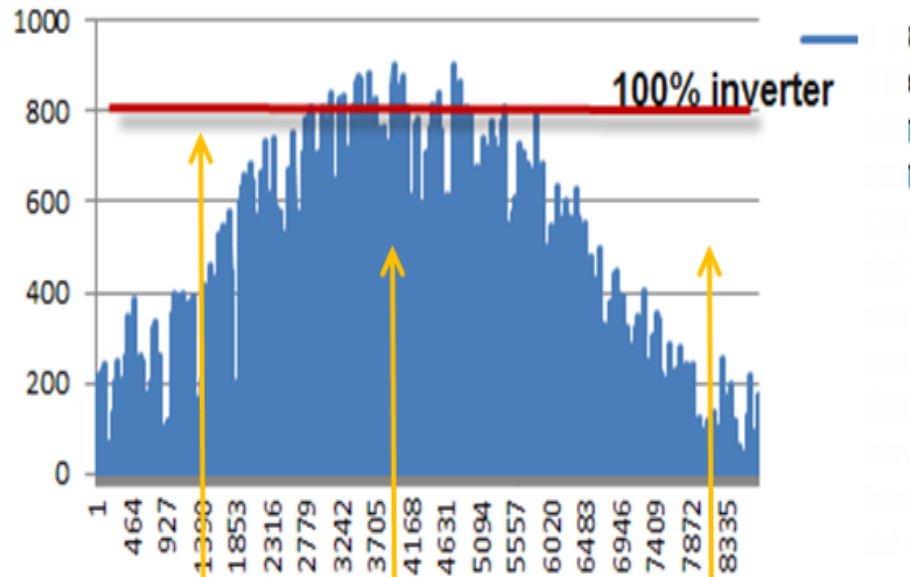
CO2 emissie reductie	ton CO2/MWh	0,526	grijze stroom, bron CO2 emissie factoren	
looptijd	jaren	20		
			geen modificatie	Q regeling
Duurzame E productie	MWh	739.817	1.355.604	1.244.338
CO2 emissie fabricatie	ton CO2			-91
CO2 emissie reductie	ton CO2	389.144	713.047	654.431
	extra reductie ton CO2		323.904	265.287
Rendement investering	euro/ton		0,31	14,04

# Hoe verder

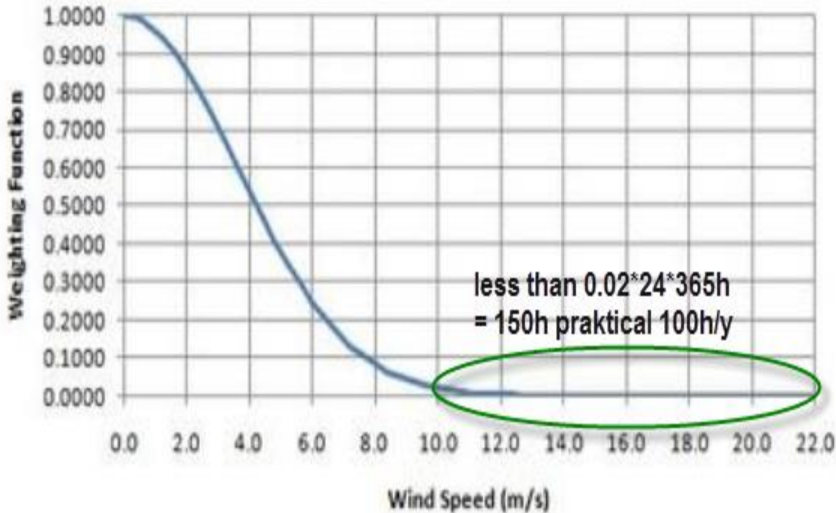
- Vraag aan de zaal ?
- vinden ze dit zinvol
- gezamenlijk regulering mogelijk maken
- Wie zou dit kiezen als alternatief tussen een vaste curtailment , of niet aansluiten ??
-

# ?? Hoe vaak

?? Minder als 10h per jaar met 10 min gemiddelden

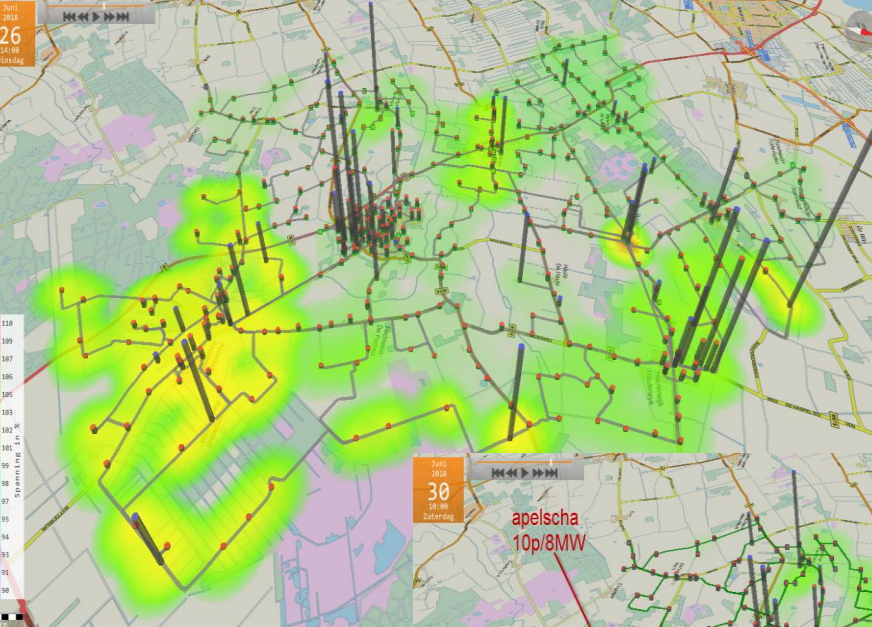


Weighting Function  
1-Cumulative Distribution

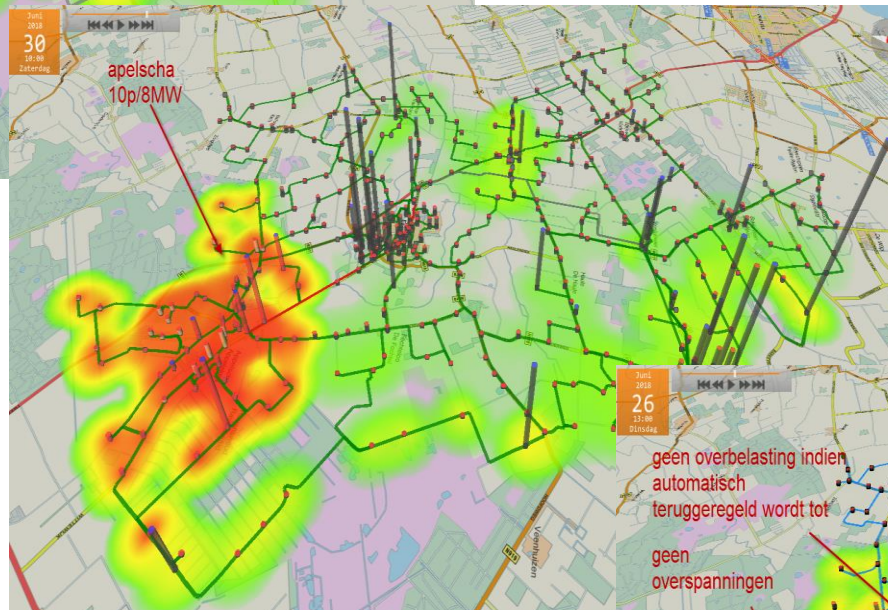




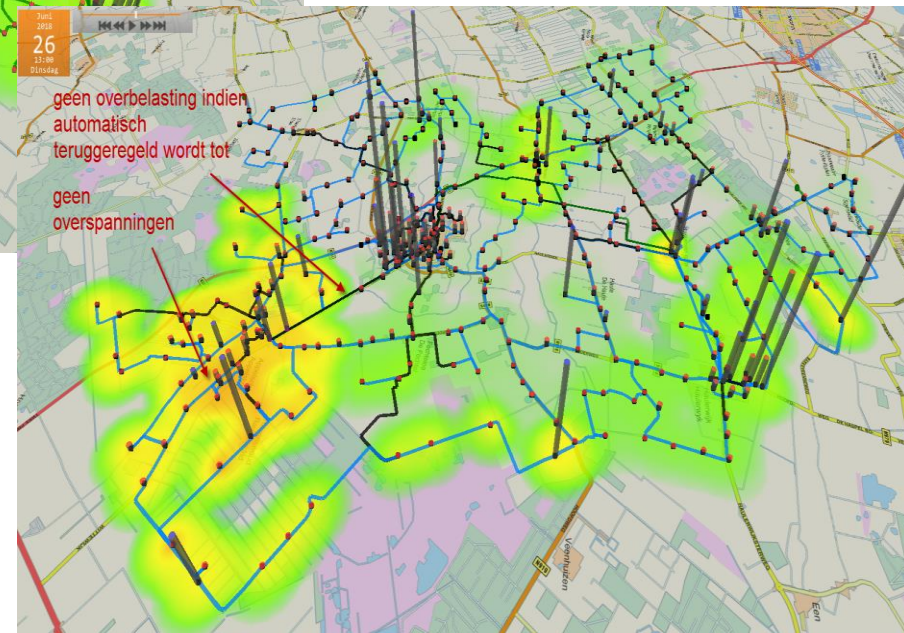
# 3 situaties



ongestoord



Met kabel  
storing



Storing met q en P  
ondersteuning