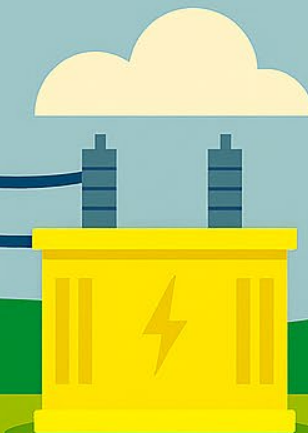


ACCESSING THE ELECTRICITY SYSTEM IN THE NETHERLANDS: GET IN LINE!

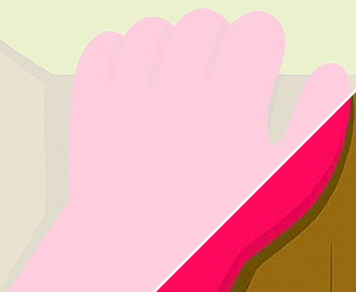
NIEDERLÄNDISCHE ERFAHRUNGEN BEIM
„QUEUING“ BEIM NETZANSCHLUSS

DR. DIRK KUIKEN

06/05/2026



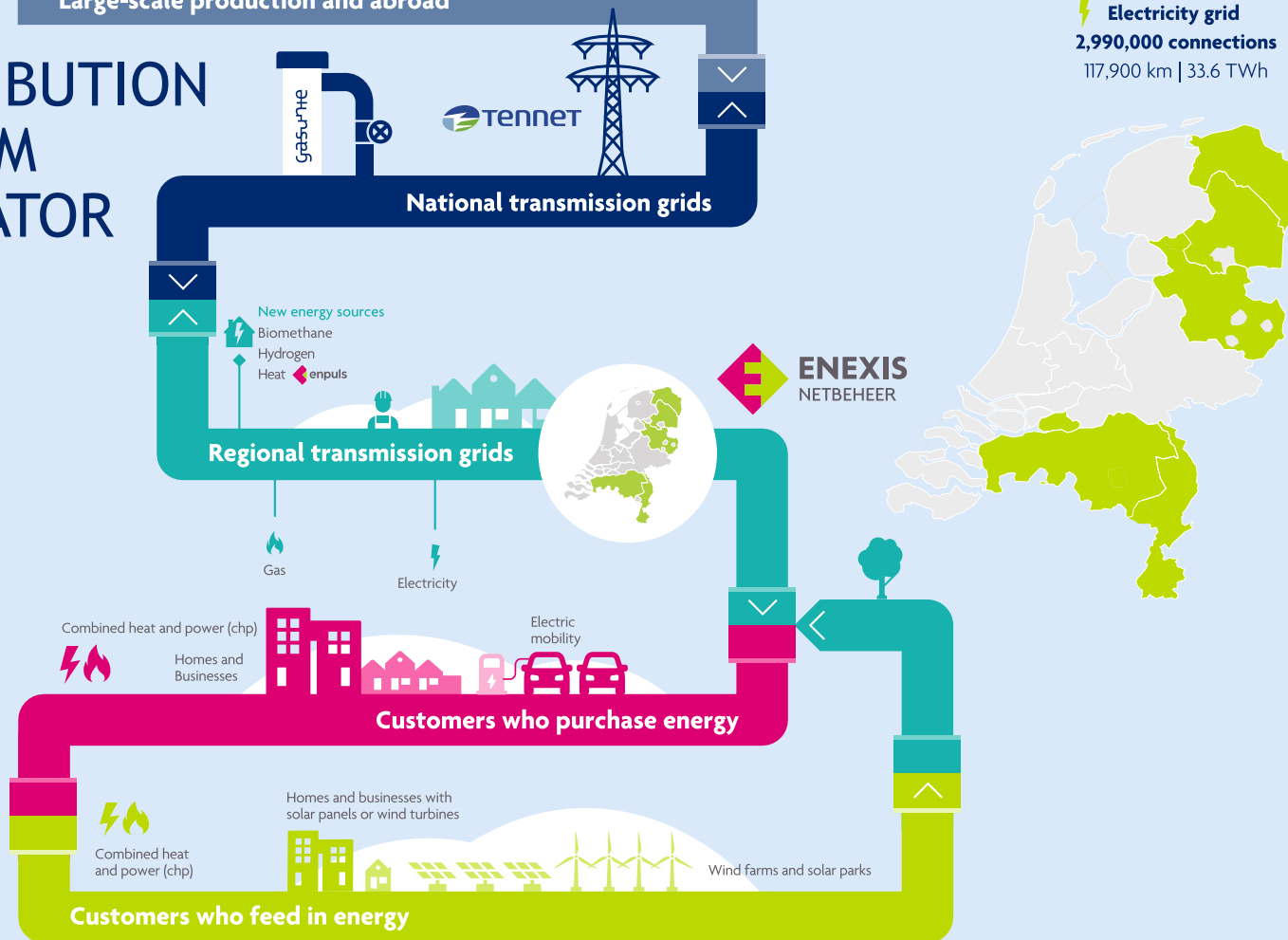
ENEXIS
GROEP



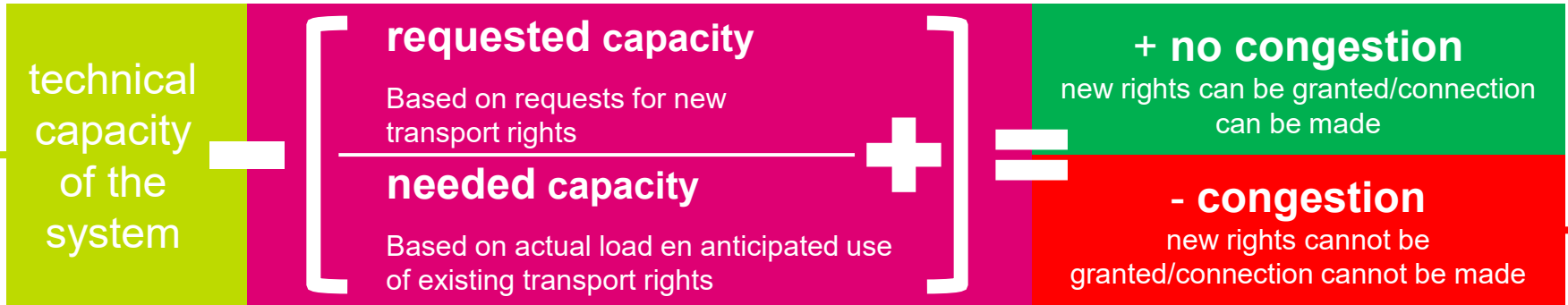
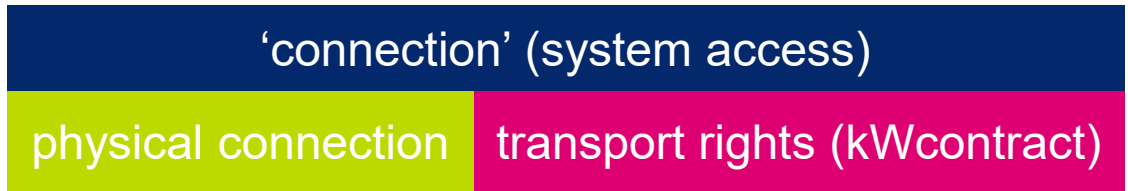
Large-scale production and abroad

DISTRIBUTION SYSTEM OPERATOR

⚡ Electricity grid
2,990,000 connections
117,900 km | 33.6 TWh



'CONNECTION AND CONGESTION' IN THE NETHERLANDS

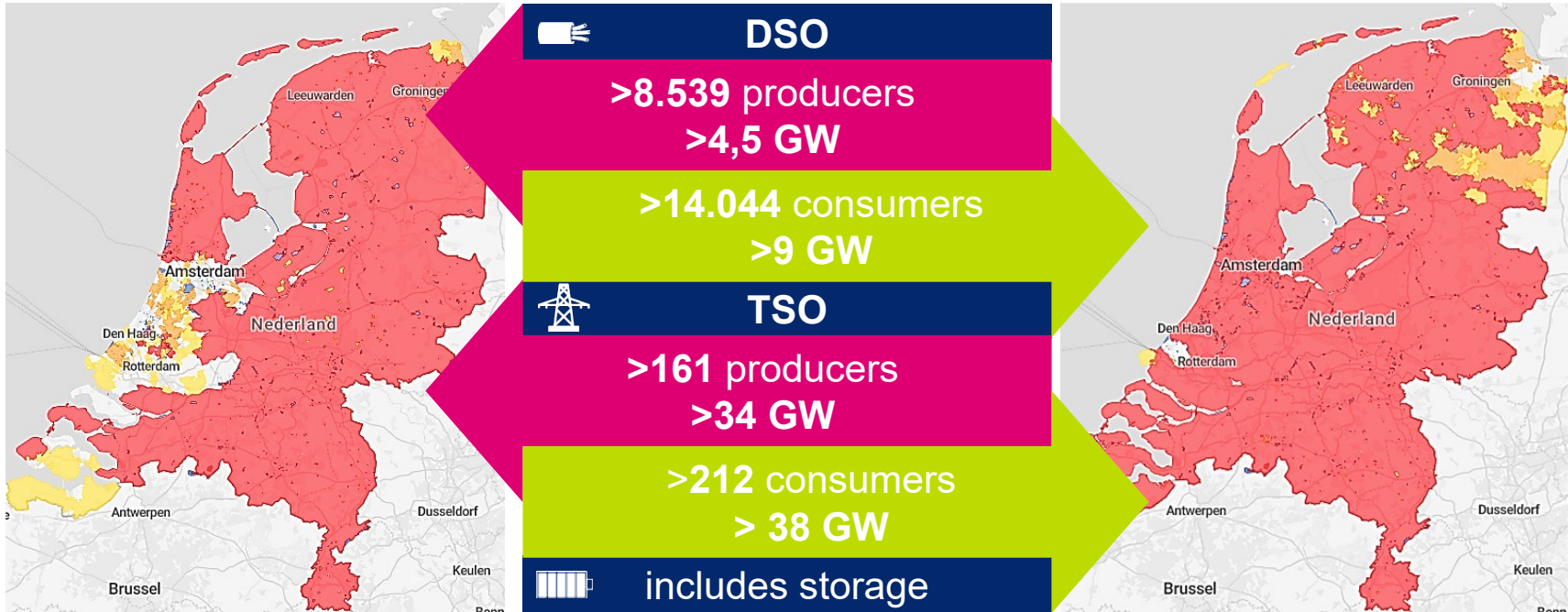


Capacity is defined per relevant system level (transmission system (110-380kV); distribution system (<110kV-400V))

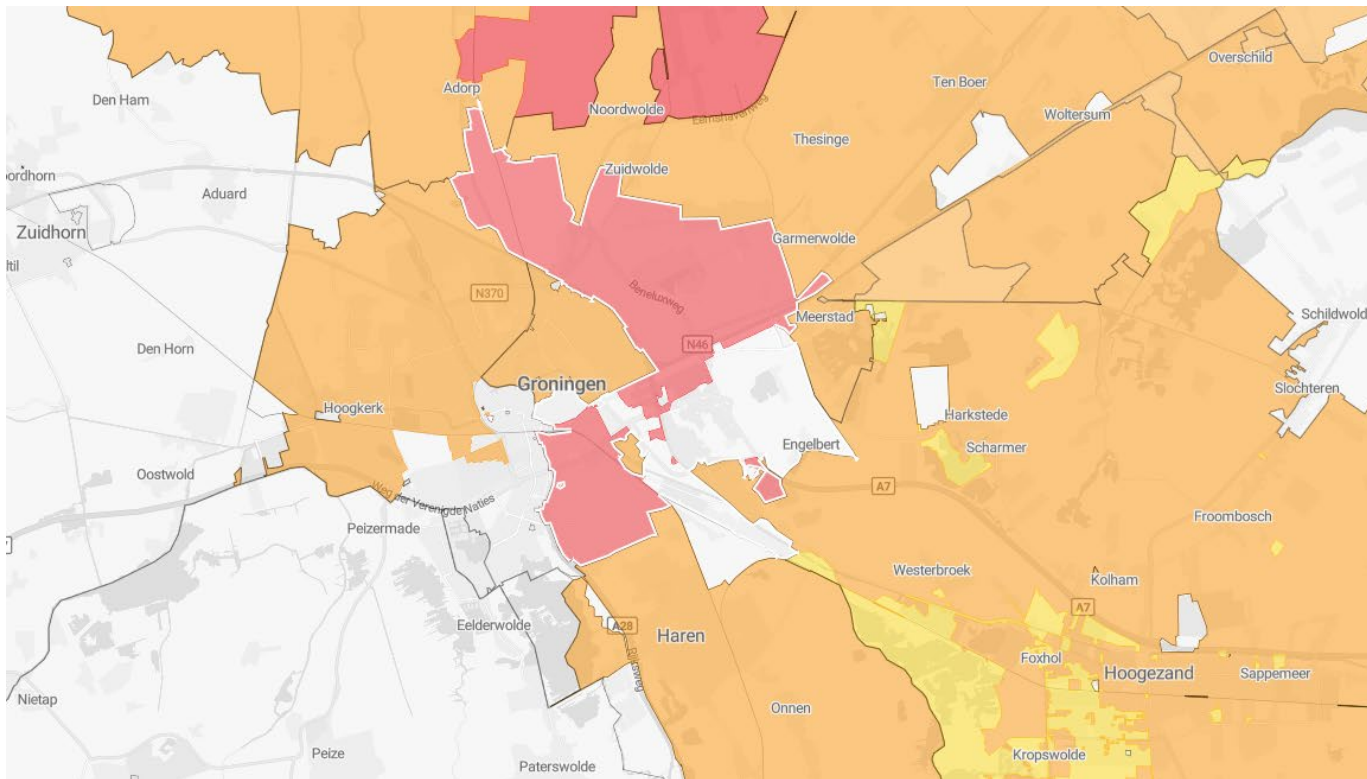
Relevant capacity restrain on lowest system level is leading: restrains on higher levels also limit capacity on lower levels



'CONNECTION AND CONGESTION' IN THE NETHERLANDS



CONGESTION MAP



Aanwezige transportcapaciteit

afname	teruglevering
108.1 MW	106.9 MW

Benodigde transportcapaciteit

afname	teruglevering
83.6 MW	86.3 MW

Unieke verzoeken in een wachtrij

afname	teruglevering
49	35

Wachtrij in vermogen

afname	teruglevering
10.4 MW	9.3 MW

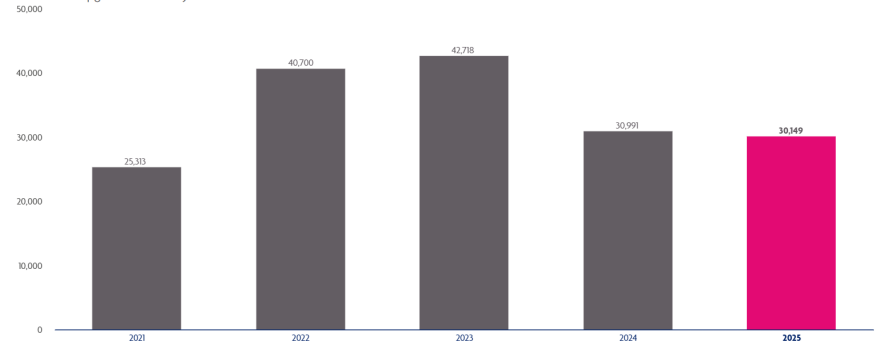
Capaciteit TenneT

afname	teruglevering
Tekort	Tekort

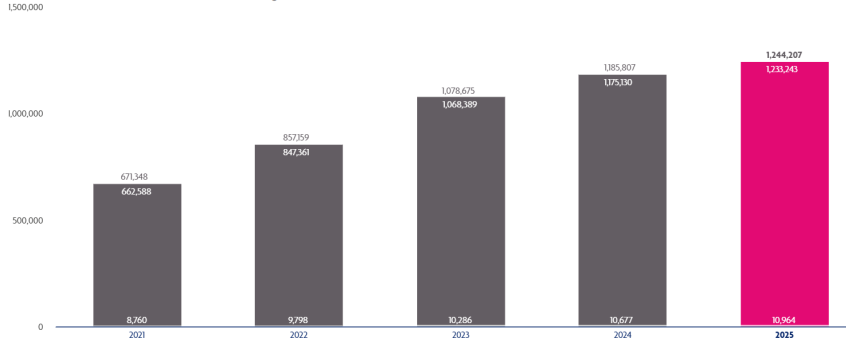


ELECTRIFICATION AND SUSTAINABLE ELECTRICITY

Number of upgraded electricity connections

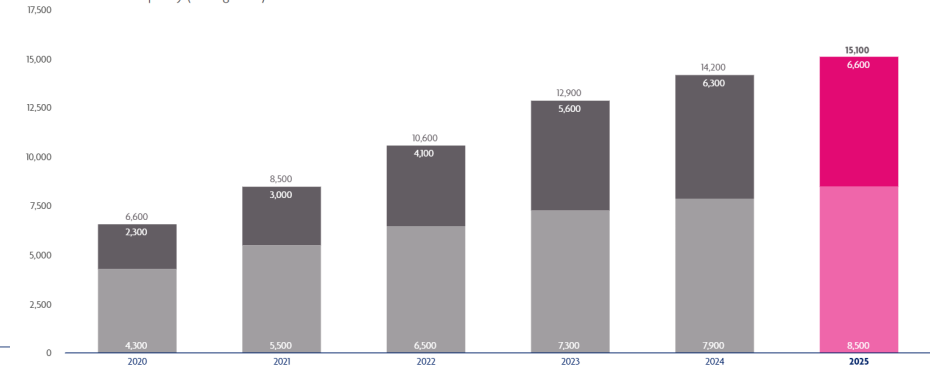


Number of connections that feed back into the grid



High volume Low volume

Sustainable installed capacity (in megawatt)



High volume Low volume



EXPANDING THE GRID (ENEXIS 2025):

Build, build, build

LV and MV
network length **1,631** km

€ **1.9** bn
investments

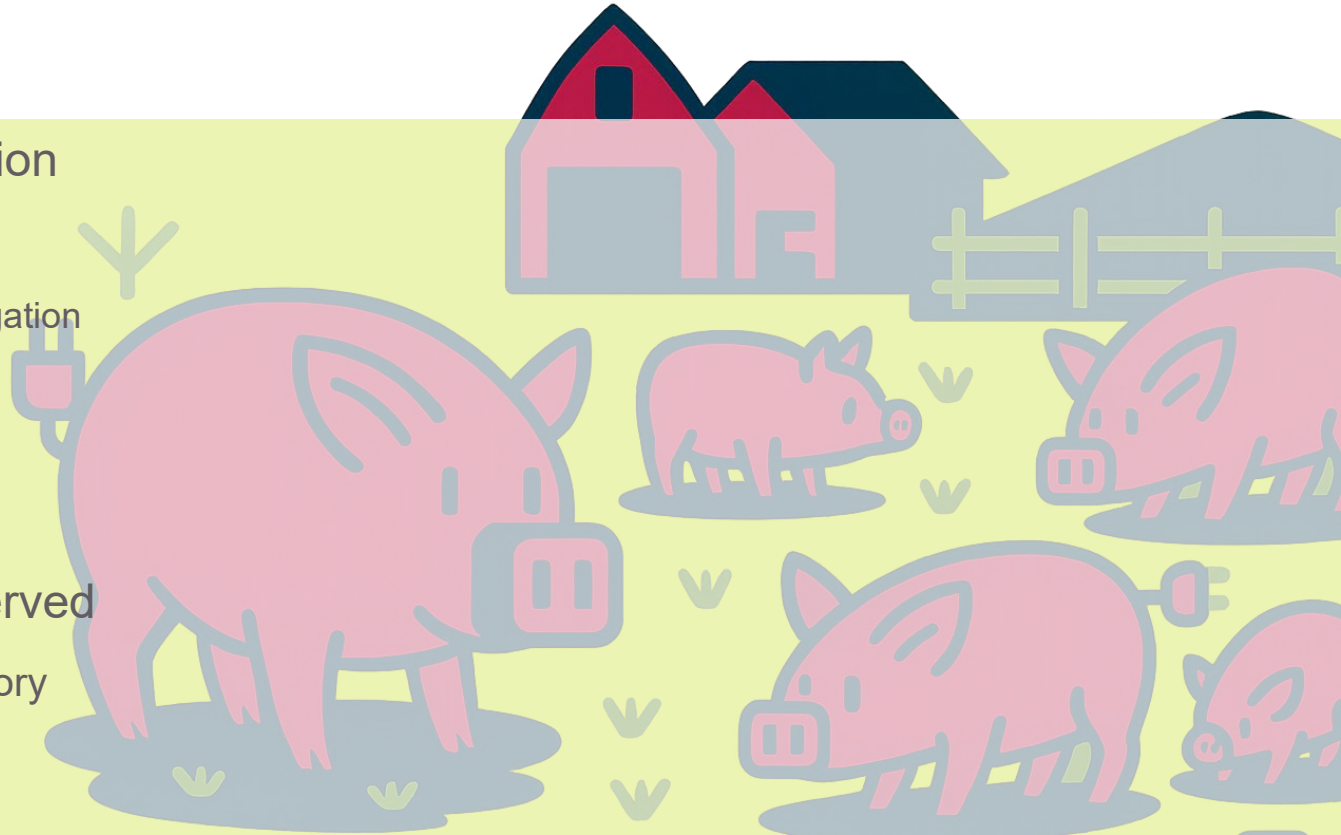
1,260 MVA Technically realised grid
capacity electricity

670 Constructed MV/LV stations



DEALING WITH QUEUING LINES

- ◆ Societal prioritization
 - ◆ Three categories
 - ◆ Congestion mitigation
 - ◆ Safety
 - ◆ Basic needs
 - ◆ All the rest
- ◆ First-come-first-served
 - ◆ Within each category
 - ◆ For all the rest



INCREASING CAPACITY

- ◆ Congestion management (since 2022)
 - ◆ Market based
 - ◆ Free market (free to bid)
 - ◆ Forced market (obliged to bid)
 - ◆ Individuals v groups (also 'small' (household) consumers – i.a. charging points)
 - ◆ Non-market based
 - ◆ Production only (at the moment)
- ◆ Technical measures (emergency curtailment)
- ◆ Tenders organized to increase flexibility for congestion management



EFFICIENT GRID USE

- ◆ Alternative (flexible) transport rights: flexible connection agreements (since 2024)
 - ◆ Time-duration based rights (x %)
 - ◆ Time-block based rights (00:00-06:00)
 - ◆ Fully flexible (based on availability – up to day-to-day basis)
 - ◆ group-based transport rights (transport sharing, by multiple connections/users) (since 2025)



IN THEORY.... IN PRACTISE...

- ◆ Solutions are both innovative and complex; successful implementation is a challenge
 - ◆ System operators and users are still getting used to new products and solutions
 - ◆ Difficult for system users to operate in line with the conditions of proposed solutions (most users are not (yet) flexible, especially on consumption side)
 - ◆ Difficult for system operators to scale products
 - ◆ Many interdependencies with other system elements (i.a. customer management systems, system operation, etc.)
 - ◆ Reform of existing system and business systems; complex IT-migrations
- ◆ (marked based) congestion management relies on ability and willingness of system users
 - ◆ Currently (still) low conversion rates
 - ◆ More success renewable production (more flexibility because of curtailment)
 - ◆ Also: use of 'emergency lane for production (N-1 → N-0); lots of extra production connected!
 - ◆ Difficulties in defining 'fair' market prices



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ARE BUILDING RELIABLE
AND SUSTAINABLE ENERGY
FOR TODAY AND FOR
THE FUTURE

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