

Gas Network Development Plan 2020-2030

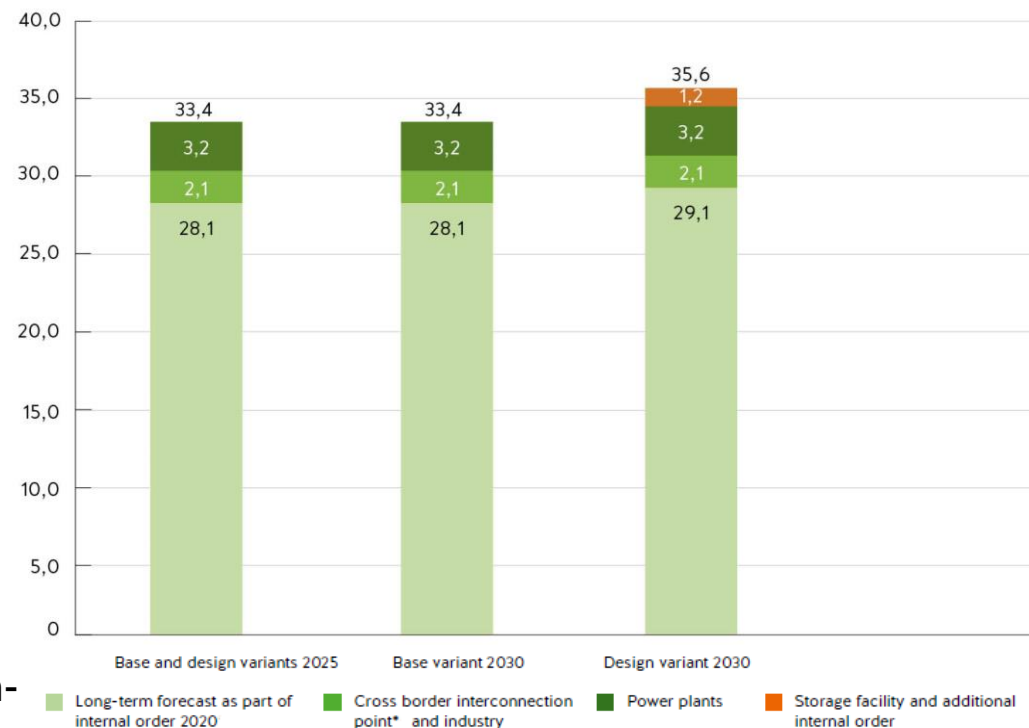
Modelling results for design variant
for Baden-Württemberg

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Design variant for Baden-Württemberg

Background and motivation

- Every year, capacity requirements exceed the long-term forecasts of the previous years.
- According to a demand analysis by terranets bw, capacity requirements expected for 2030 will exceed the assumptions of the base variant.
- In order to examine the future potential of the gas transmission systems, the design variant for Baden-Württemberg for 2030 has been reviewed.



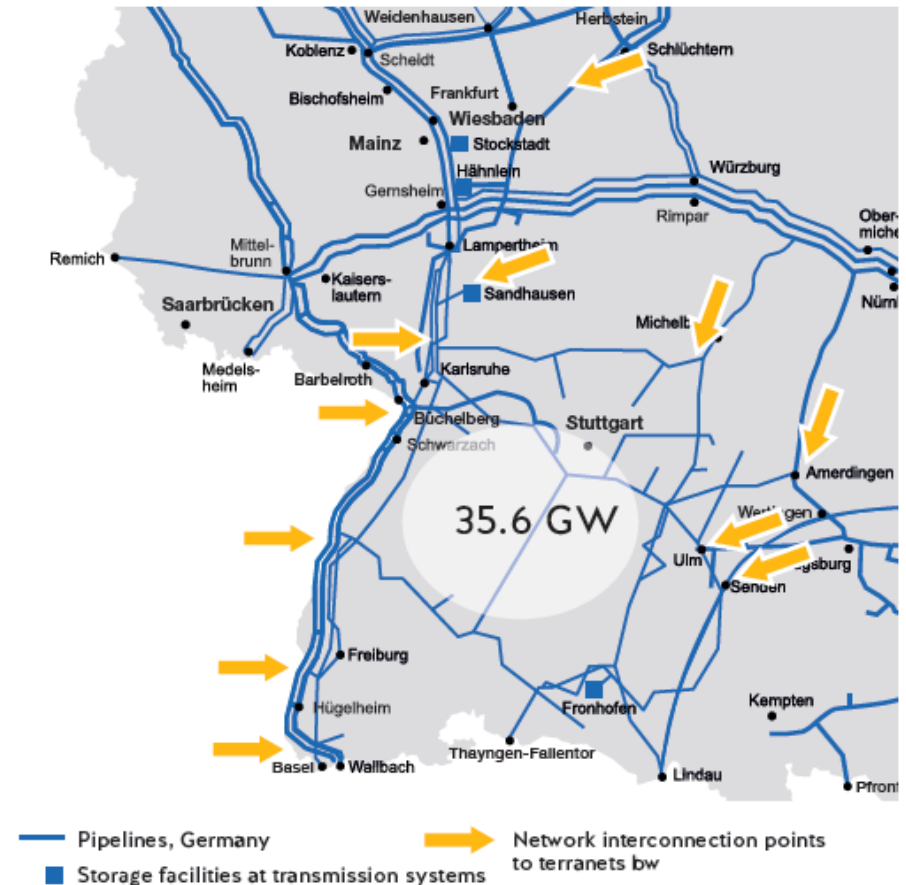
*Standard IP without requests of incremental capacity

Source: terranets bw

Design variant for Baden-Württemberg

Premises

- Following on from the results of the base variant, the design variant for Baden-Württemberg is based on a demand of 35.6 GWh/h in the model year 2030/31.
- The capacity increase of around 2.2 GWh/h compared to the base variant takes full account of the long-term forecast of the DSOs up until 2030 and the loss of storage capacity.



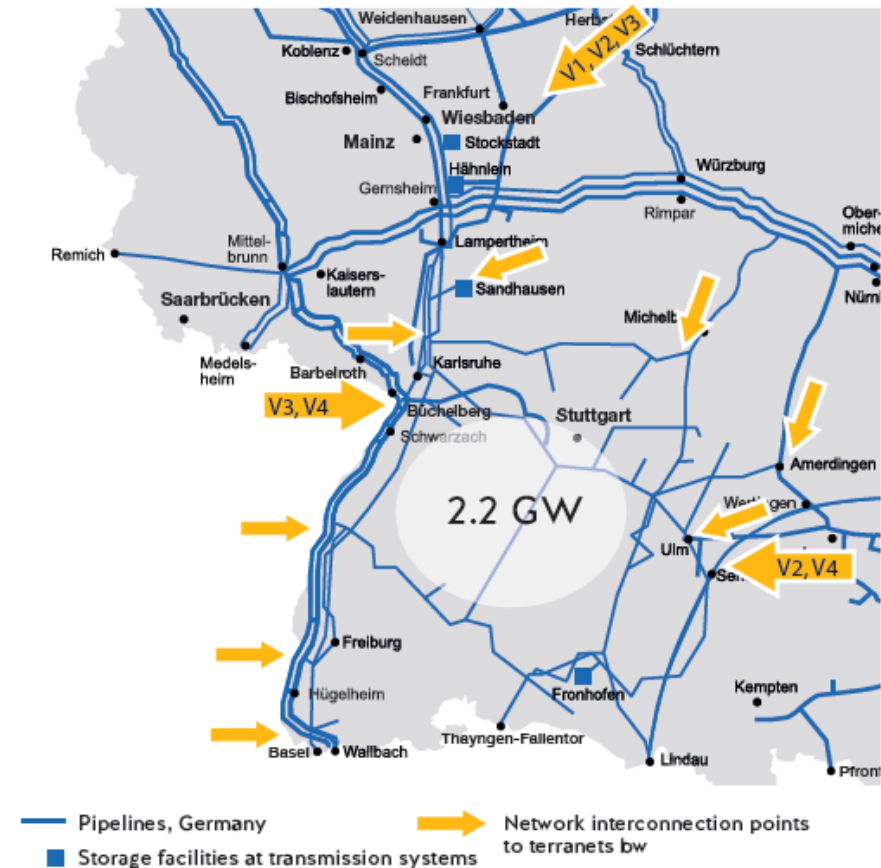
Source: Transmission system operators, Fig. 35 NDP Gas 2020-2030

Design variant for Baden-Württemberg

Overview of supply variants

The transmission system operators have looked at various supply variants to determine network expansion requirements.

- Supply variant 1: North (V1)
- Supply variant 2: North+East (V2)
- Supply variant 3: North+West (V3)
- Supply variant 4: West+East (V4)



Source: Transmission system operators, Fig. 36 NDP Gas 2020-2030

Design variant for Baden-Württemberg

Supply variant 1: North

The additional 2.2 GWh/h of capacity required is provided via the Wirtheim network interconnection in Hesse.

Network expansion projects by terranets bw

- **Extension** of measures identified in the base variant
 - Heidelberg M&R station (ID 616-01)
 - Heilbronn M&R station (ID 618-01)
 - Kirchheim unter Teck M&R station (ID 620-01)
 - Weißensberg 2 M&R station (ID 624-01)
- **New build projects** on top of base variant
 - Nenzingen-Stahringen pipeline (ID 643-01)
 - Schwäbische Alb compressor station (ID 644-01)



Cost estimate

terranets bw: € 64m

Upstream TSOs: -

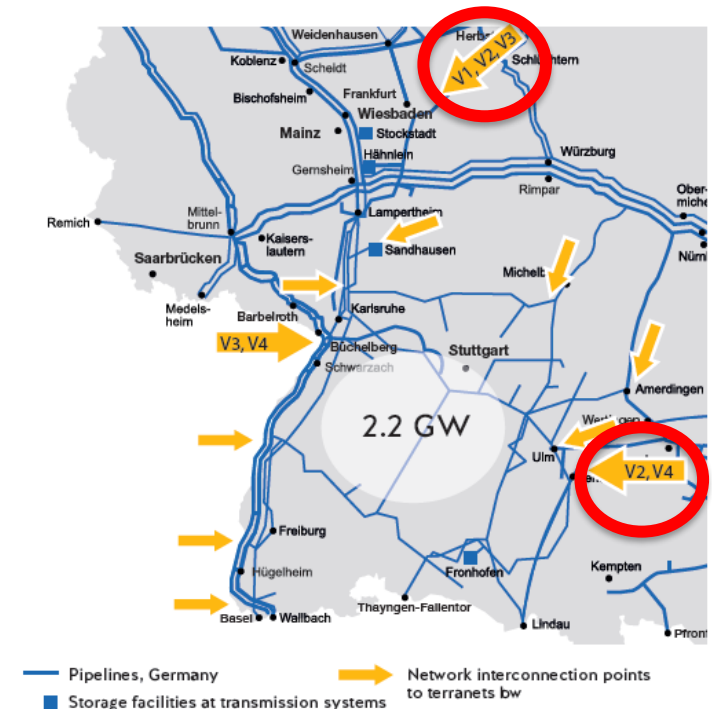
Design variant for Baden-Württemberg

Supply variant 2: North+East

1.65 GWh/h of the additional capacity required is provided via the Wirtheim network interconnection in Hesse and 0.55 GWh/h via the Hittistetten network interconnection in the east.

Network expansion projects by terranets bw

- **Extension** of measures identified in the base variant
 - Same M&R stations as for supply variant 1
- **New build projects** on top of base variant
 - Nenzingen-Stahringen pipeline
 - Compressor station for gas transmission in the direction of the Upper Swabia / Lake Constance region



Cost estimate

terranets bw: € 64m

Upstream TSOs: € 50m

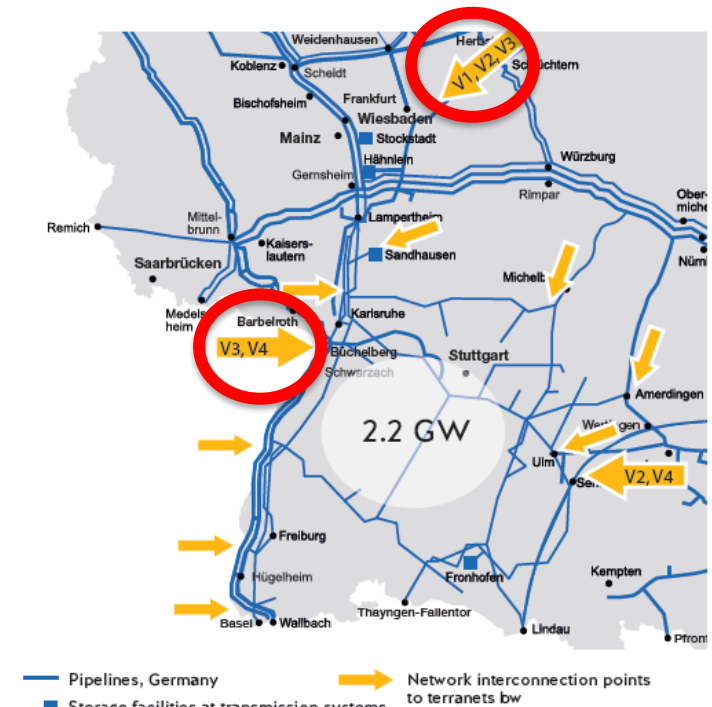
Design variant for Baden-Württemberg

Supply variant 3: North+West

0.40 GWh/h of the additional capacity required is provided via the Wirtheim network interconnection in Hesse and 1.80 GWh/h via the Au am Rhein network interconnection in the west.

Network expansion projects by terranets bw

- **Extension** of measures identified in the base variant
 - Same M&R stations as for supply variant 1
 - Expansion of Northern Black Forest pipeline compressor station
- **New build projects** on top of base variant
 - Nenzingen-Stahringen pipeline
 - Schwäbische Alb compressor station



Cost estimate

terranets bw: € 90m

Upstream TSOs : 100m EURO

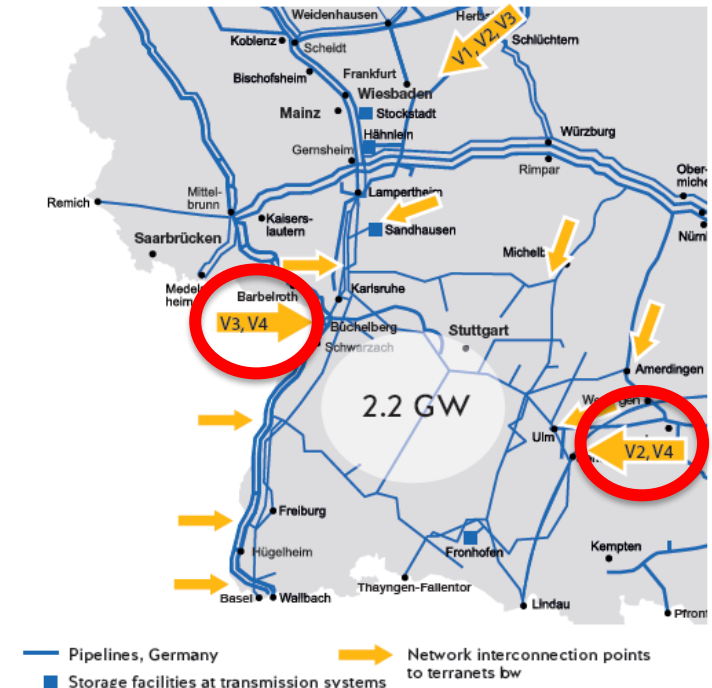
Design variant for Baden-Württemberg

Supply variant 4: West+East

0.40 GWh/h of the additional capacity required is provided via the Hittistetten network interconnection in the east and 1.80 GWh/h via the Au am Rhein network interconnection in the west.

Network expansion projects by terranets bw

- **Extension** of measures identified in the base variant
 - Expansion of Northern Black Forest pipeline compressor station
- **New build projects** on top of base variant
 - Nenzingen-Stahringen pipeline
 - Compressor station for gas transmission in the direction of the Upper Swabia / Lake Constance region



Cost estimate

terranets bw: € 84m

Upstream TSOs: € 140m

Design variant for Baden-Württemberg

Results and network expansion recommendation

	2030			
	V1	V2	V3	V4
Measures in the terranets network area				
- Additional compressor capacity in comparison with base variant in MW	7	7	11	11
- Additional pipeline construction in comparison with base variant in km	7	7	7	7
Cost estimate of terranets in addition to the base variant in EUR million	64	64	90	84
Cost estimate in the network of upstream TSOs in addition to the base variant in EUR million	-	50	100	140
Estimated total additional costs in comparison with the base variant in EUR million	64	114	190	224

Source: Transmission system operators, Tab. 36 NDP Gas 2020-2030

- Supply variant 1 is the most cost-effective alternative.
- New network expansion projects need to be reviewed in Gas NDP 2022-2032 with regard to further developments.
- It is proposed that the projects identified in the base variant are implemented in terms of size in accordance with the design variant.

Thank You

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