Flutningskerfi í nýjum heimi

Haustfundur Rafstaðlaráðs 2024

Magni Þ. Pálsson

Verkefnastjóri rannsókna hjá Landsneti

Innihald

- Breyttur veruleiki – ný tegund viðskiptavina
- Þróun flutningskerfisins – frá mörgum smákerfum til samtengds
- Kerfi dagsins…og áfram til 2030
- Hvað svo (2050+)?
  - Nýir orkukostir (einkum vindur)
  - Ný notkun
  - Hvað með flutningskerfið?
- Flutningskerfið
  - Uppbygging
  - Tæknilausnir
  - Kerfisrekstur – Markaðslausnir
- Nýr veruleiki – nýjar aðferðir

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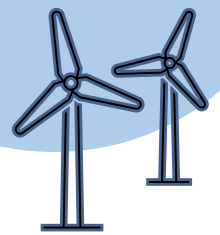
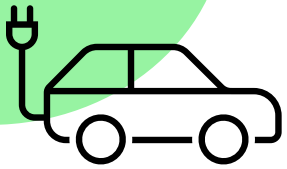
Stafræn tækni

Flutningskerfið

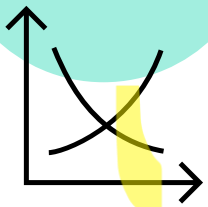
Vindorka



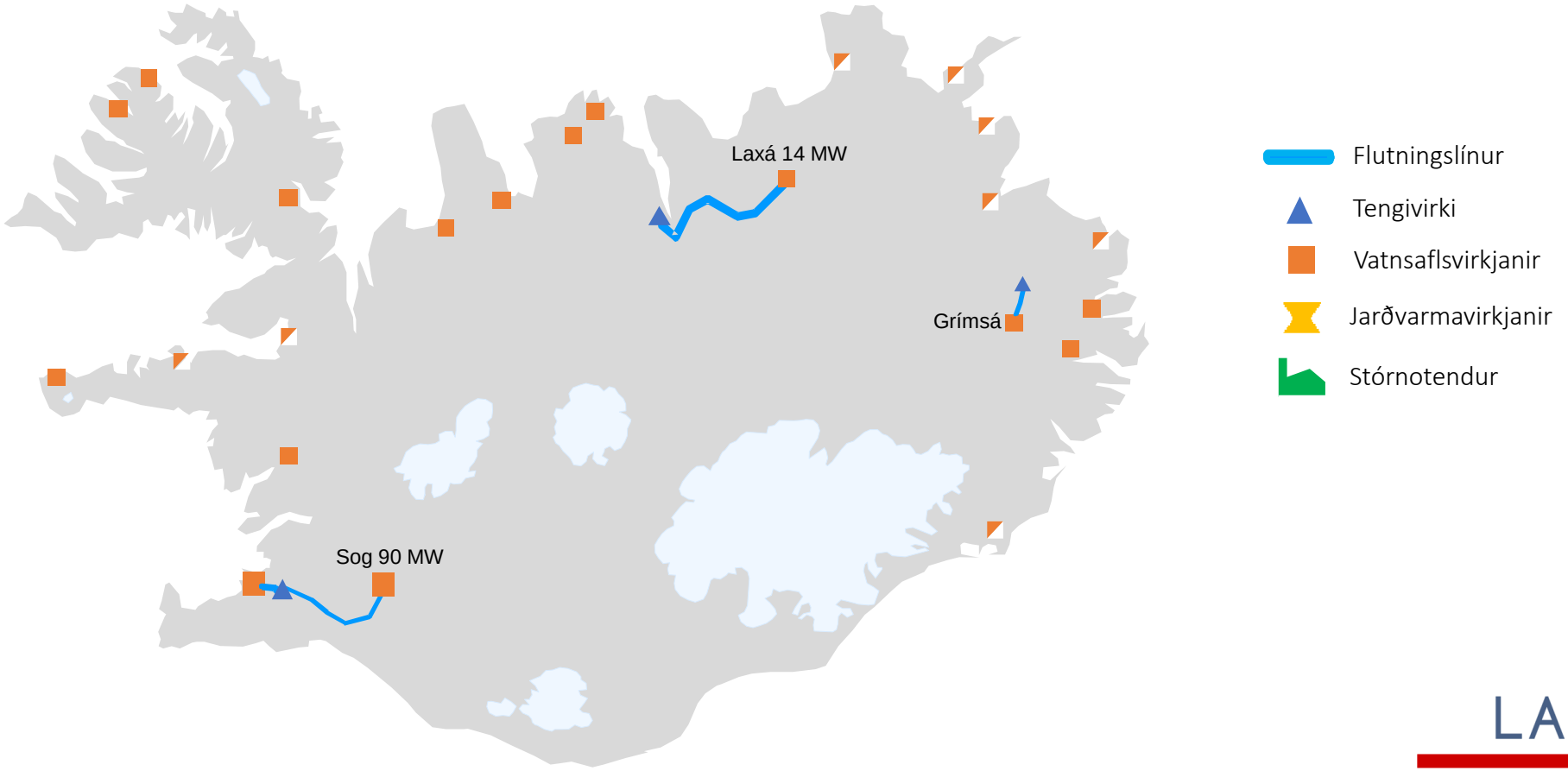
Orkuskipti



Markaður



Þróun flutningskerfisins til 2024



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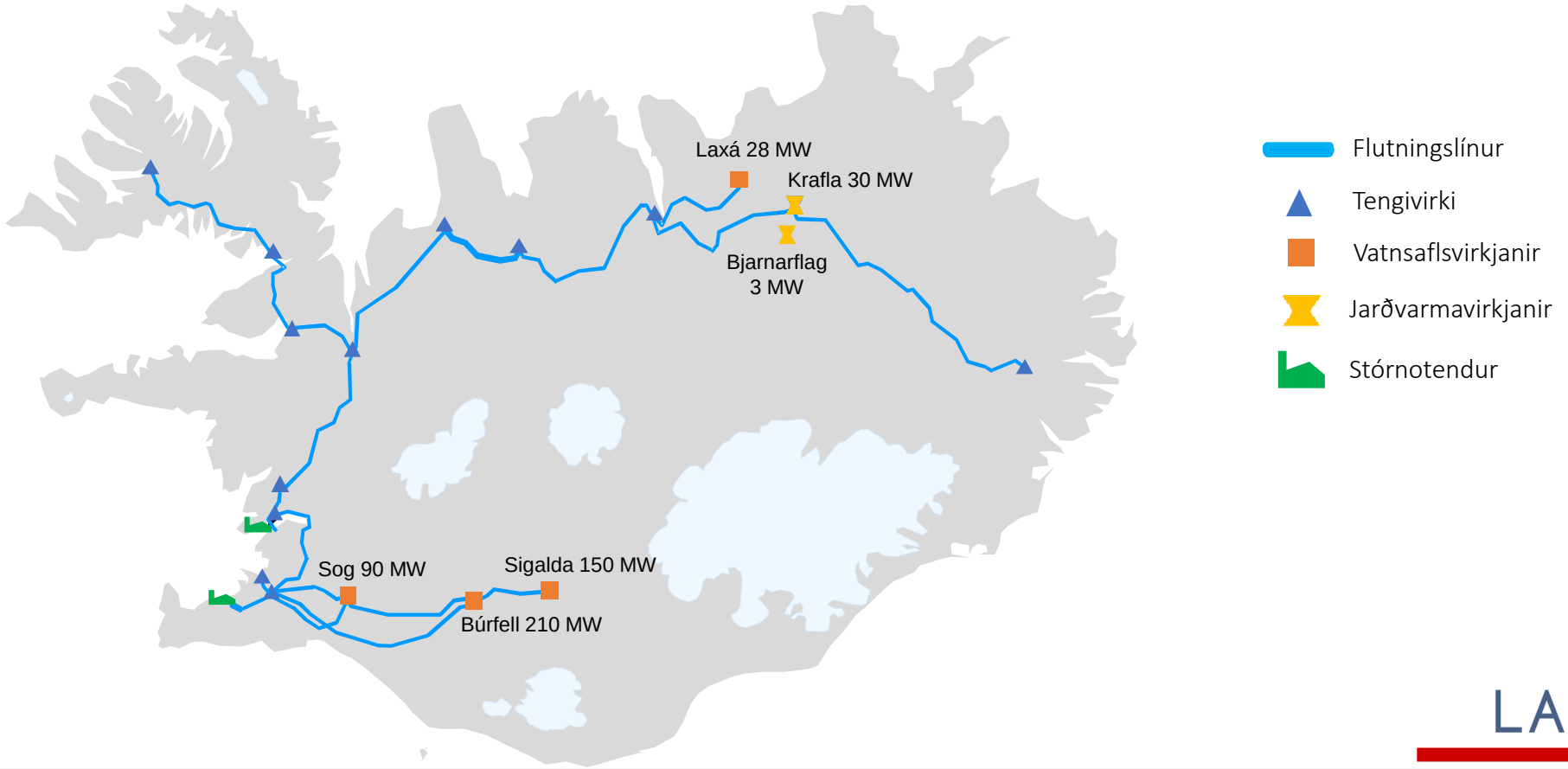
Þróun flutningskerfisins til 2024



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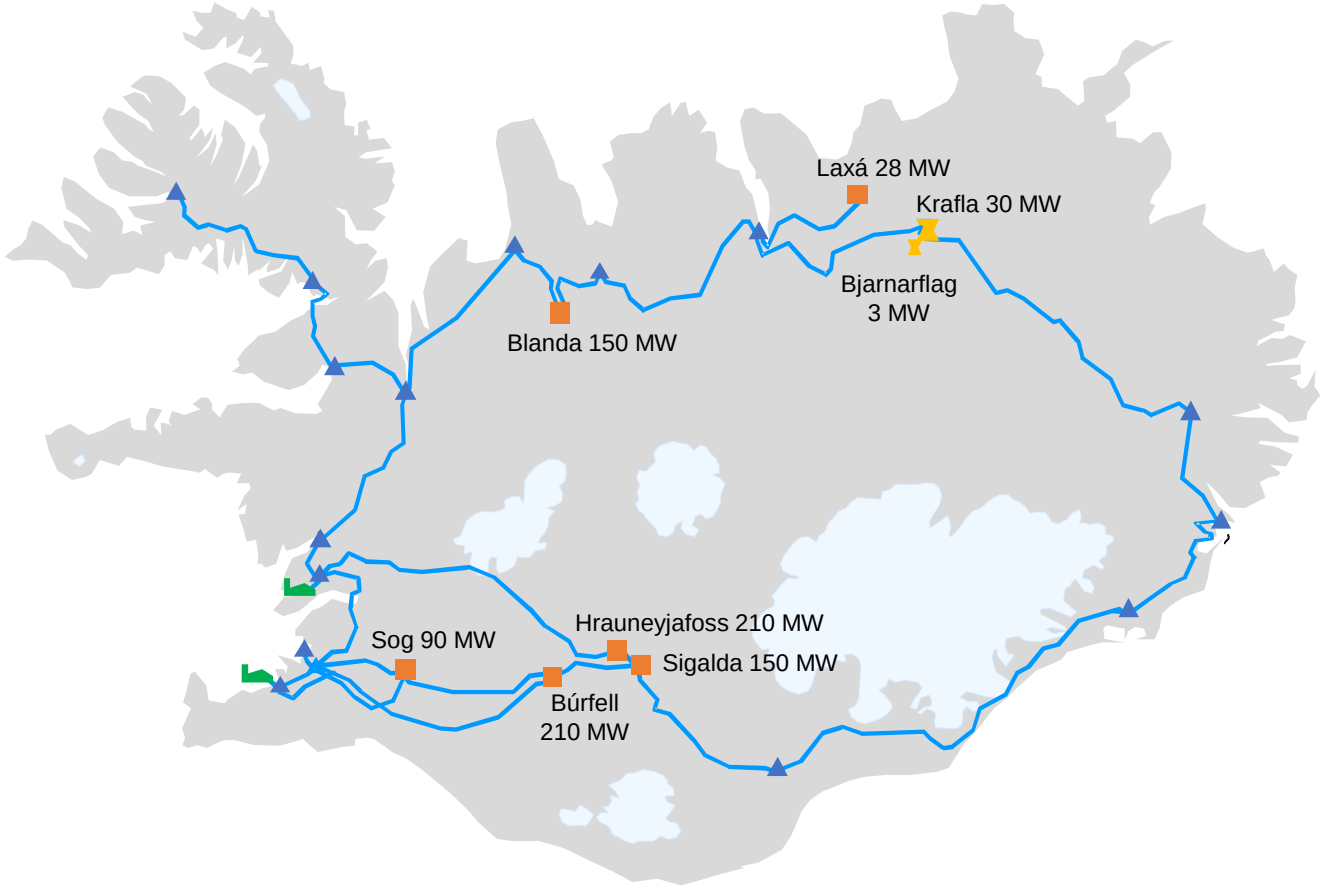
Þróun flutningskerfisins til 2024

1960 → 1980 → **1995** → 2016 → 2024



- Flutningslínur
- Tengivirki
- Vatnsaflsvirkjanir
- Jarðvarmavirkjanir
- Stórnotendur

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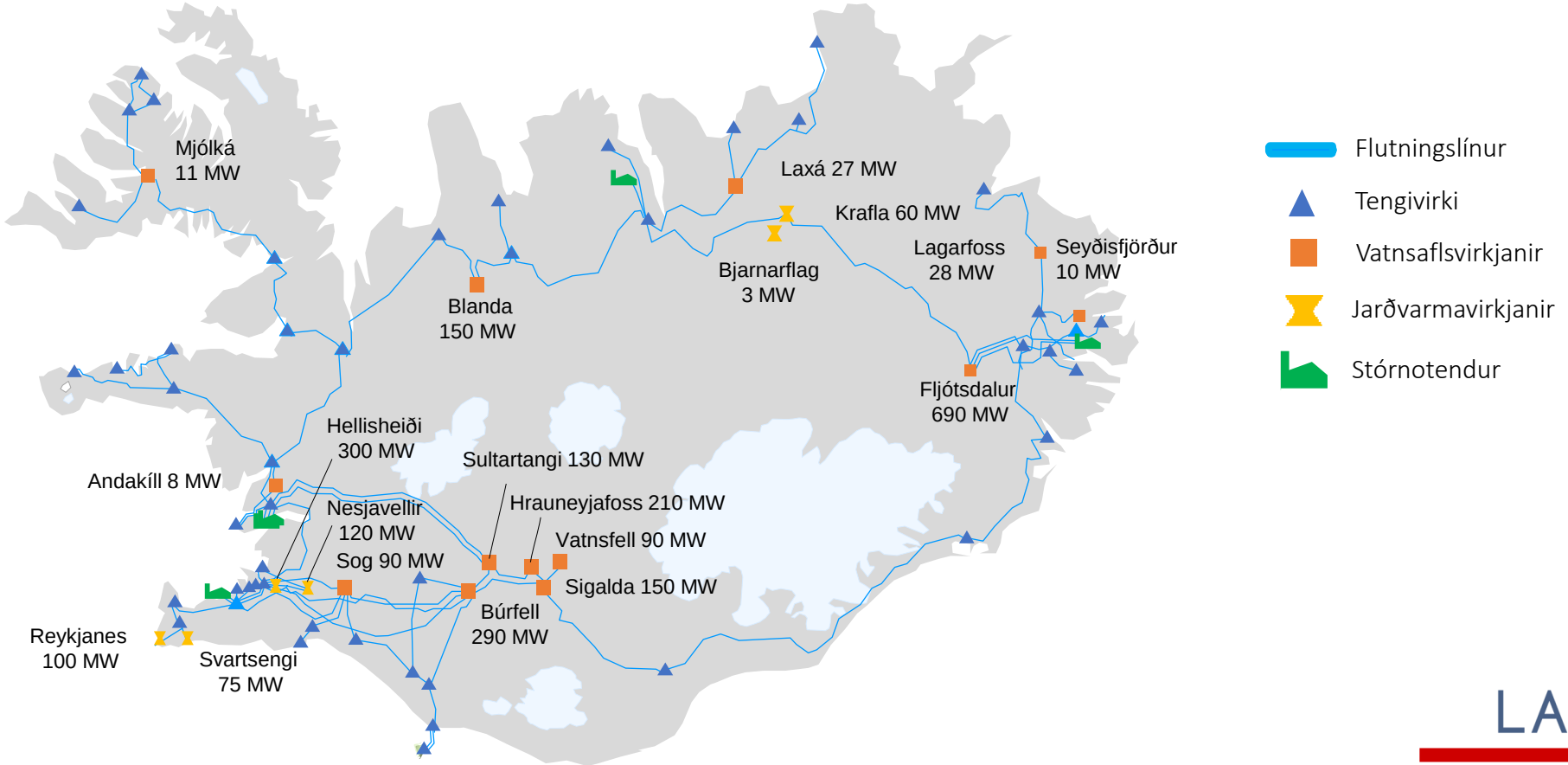
Þróun flutningskerfisins til 2024

1960 → 1980 → 1995 → **2016** → 2024



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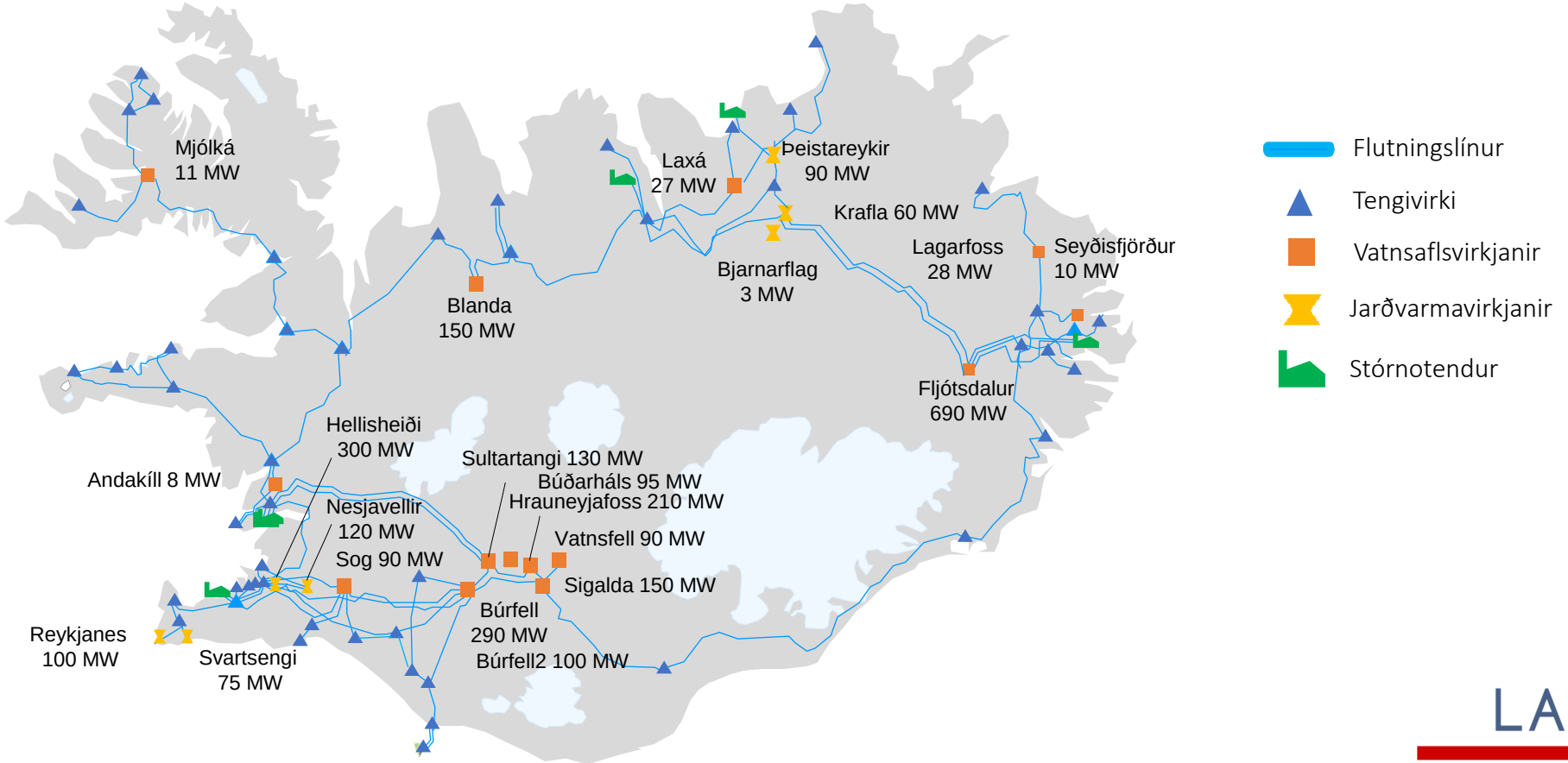
Þróun flutningskerfisins til 2024



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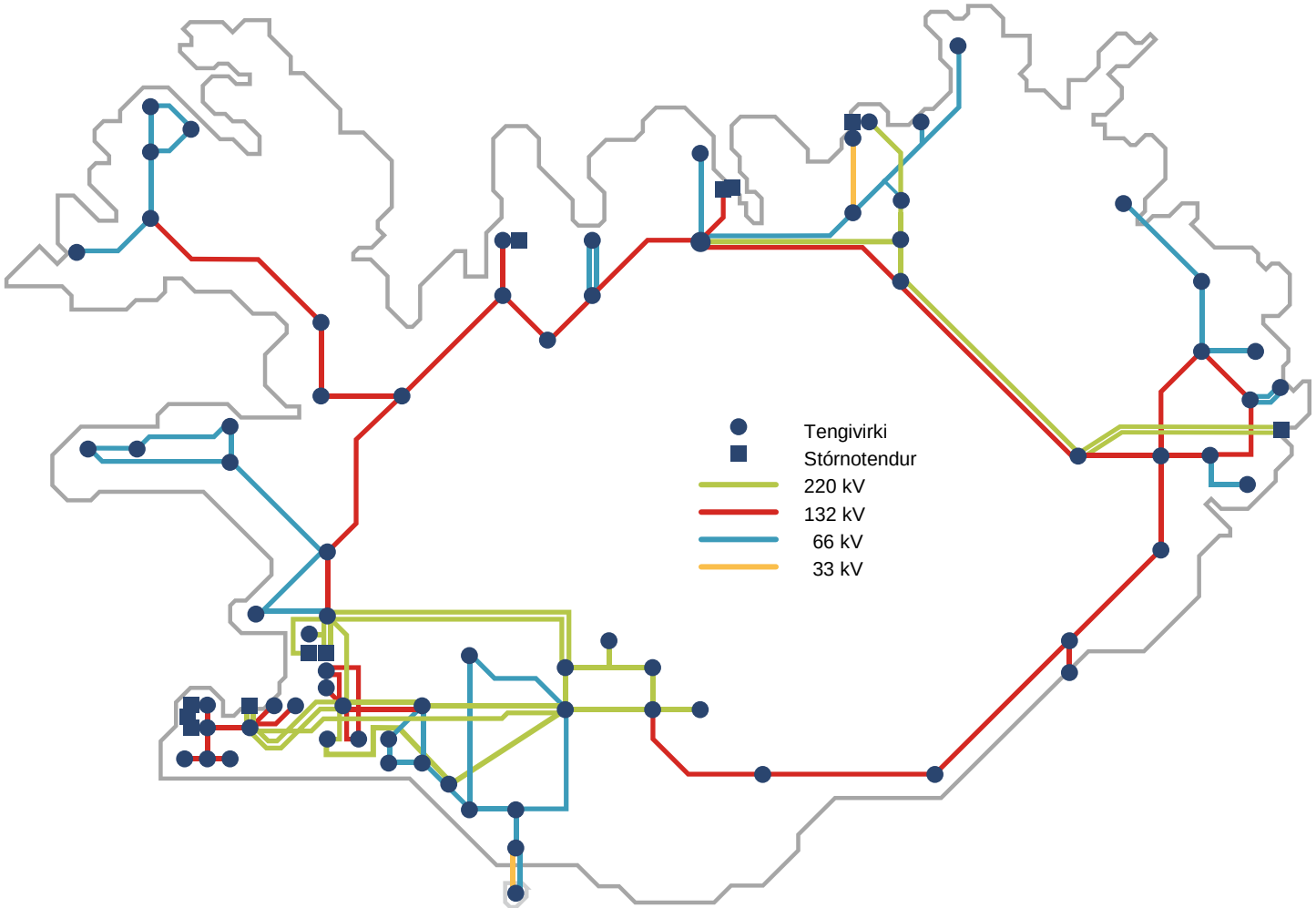
Raforkukerfið 2024



Uppsett vinnslugeta: 2822 MW
Hámarksálag: 2690 MW

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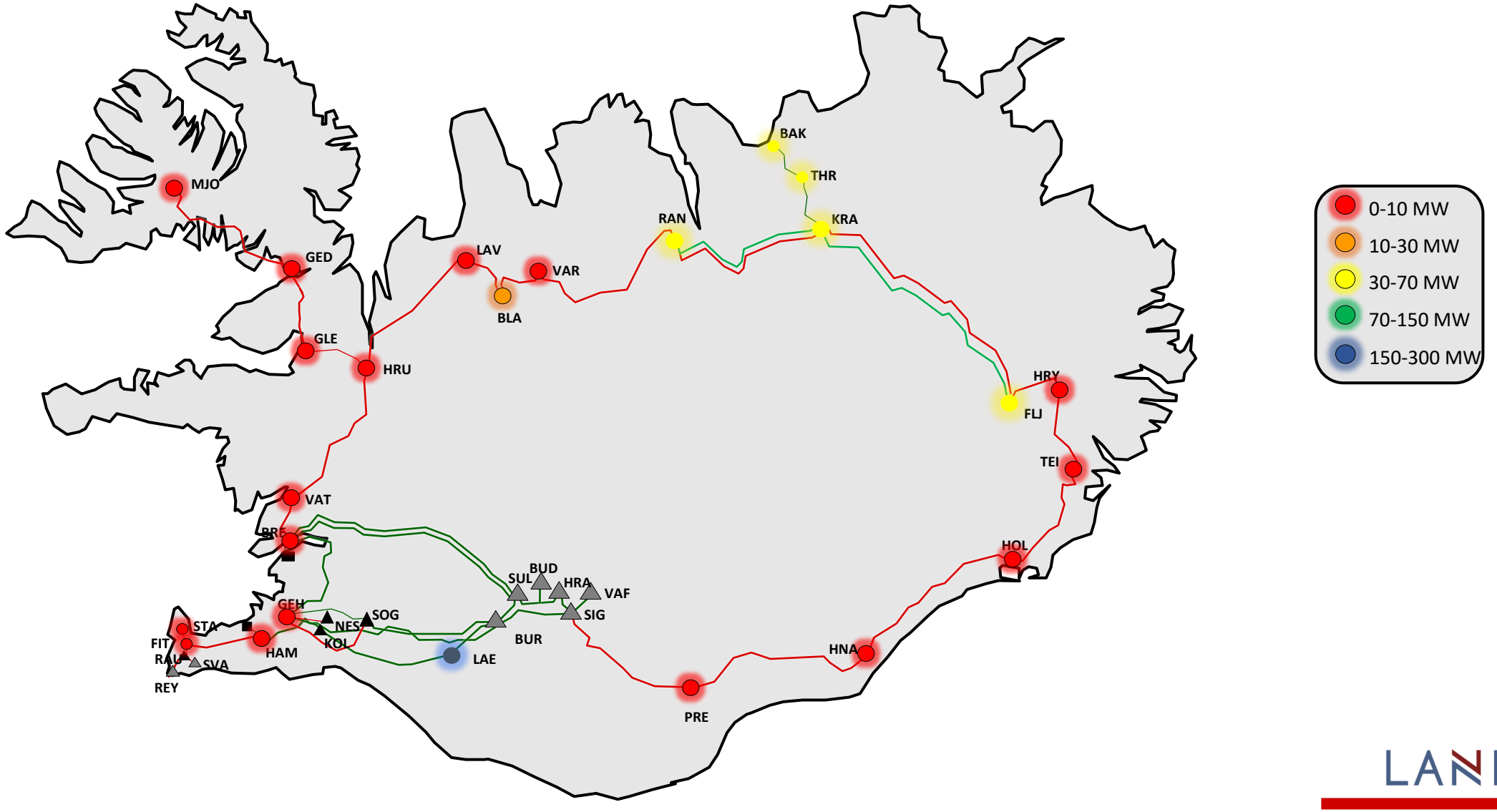
Viðbótarafhendingargeta í óskertu kerfi 2024



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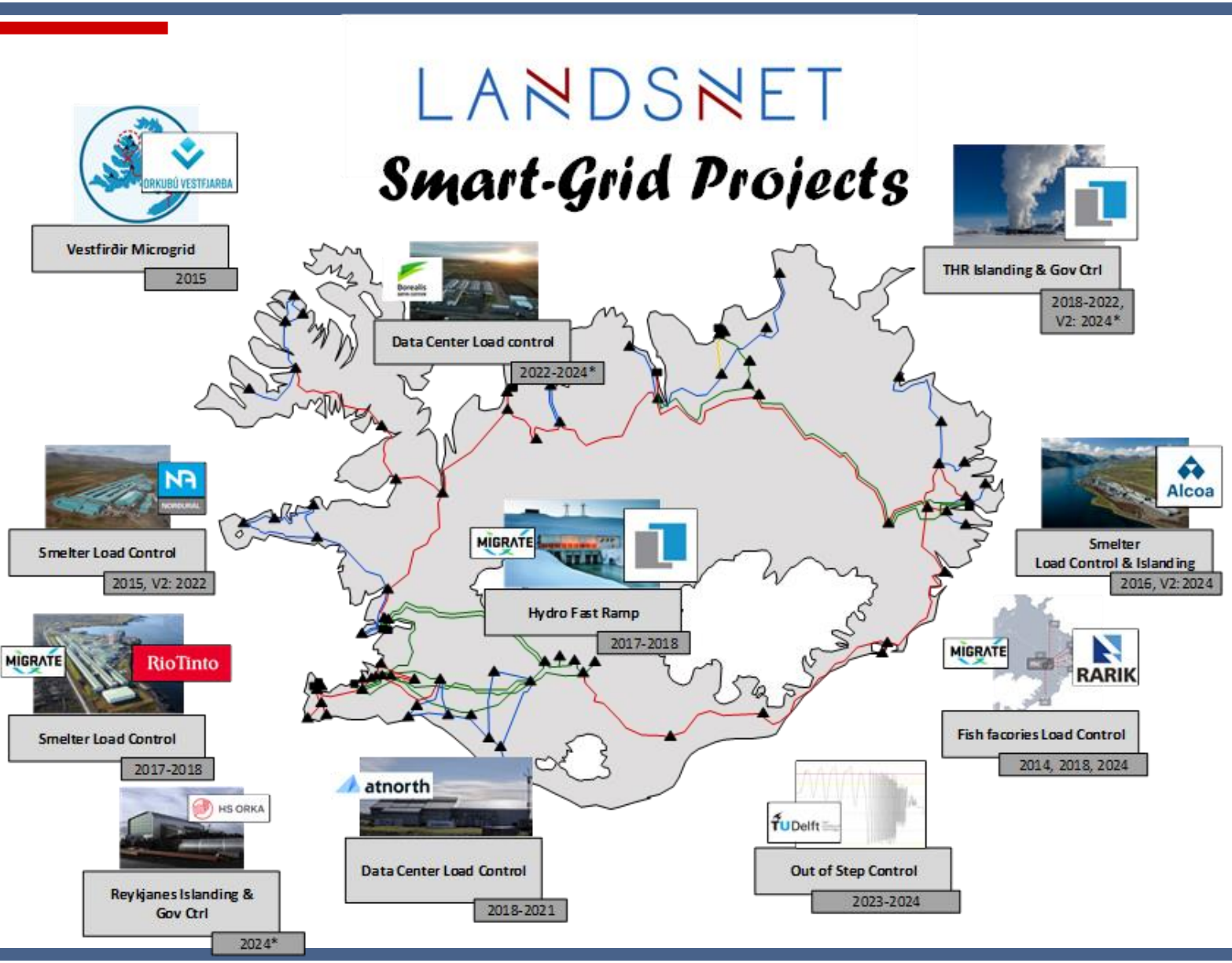
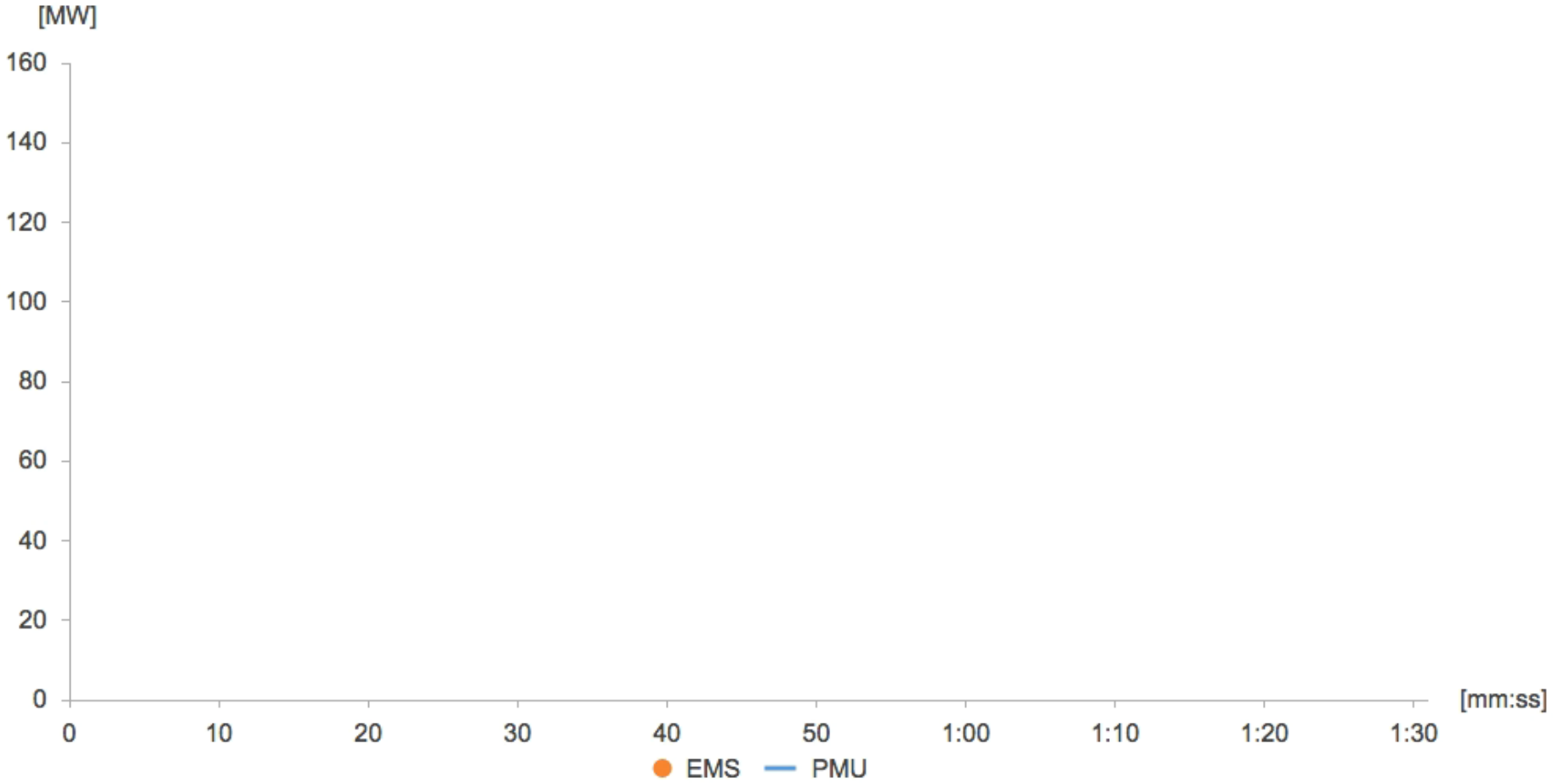
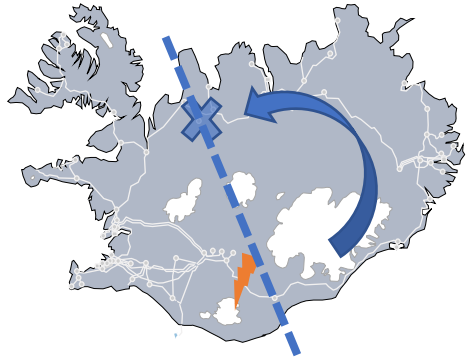
Kerfisvarnir og önnur snjallnetsverkefni



Orkustjórnkerfið vs víðsjáin





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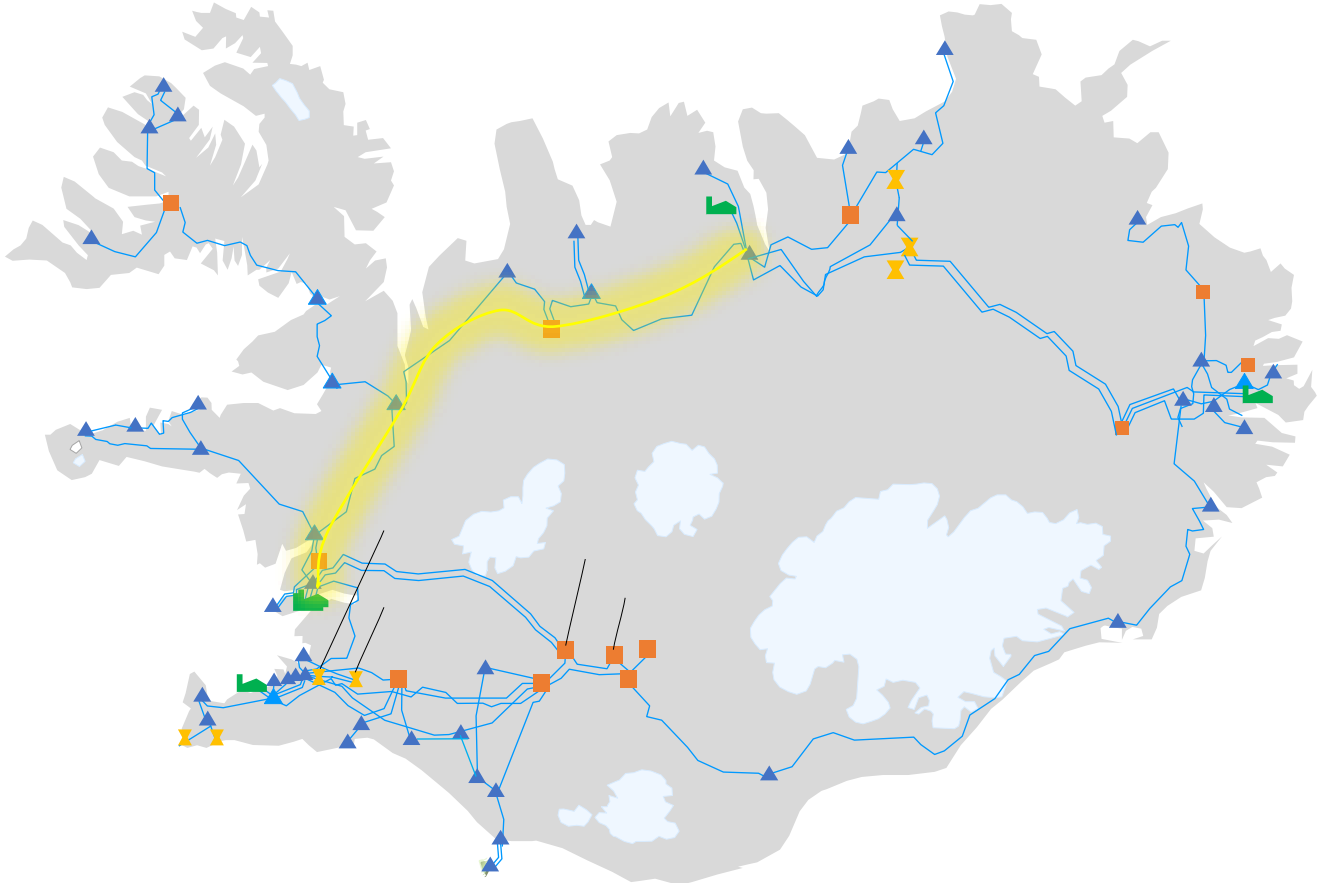
…og áfram

1960 → 1980 → 1995 → 2016 → 2024 → **2030**



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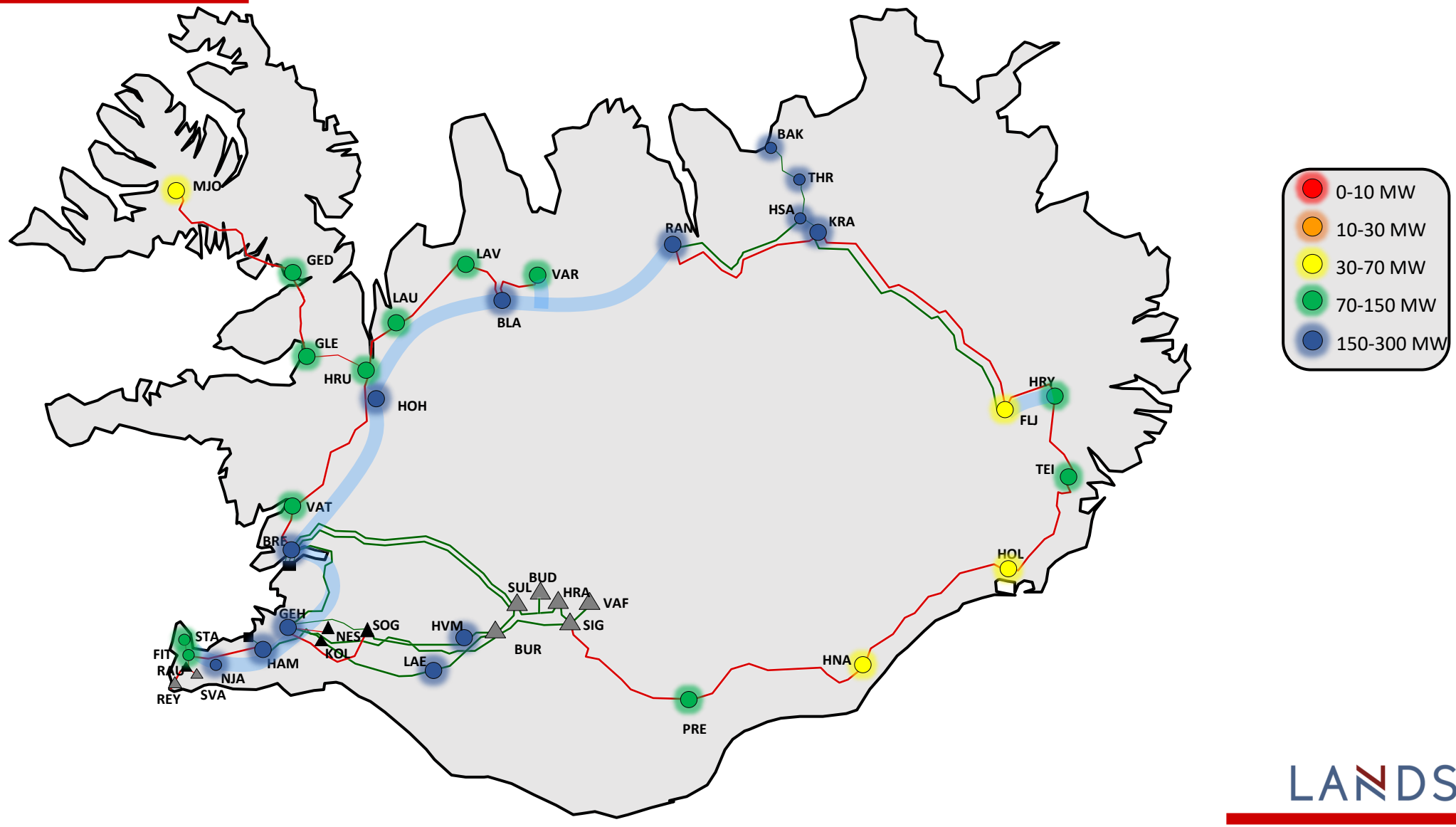
Viðbótarafhendingargeta í óskertu kerfi 2030



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Vindorkukostir til meðhöndlunar í RÁ4

Virkjunarkostur	Tegund orkuvinnslu	Uppsett afl, M	Orkuvinnslugeta, GWst/ári
Búrfellslundur	Vindorka	120	440
Hnotasteinn	Vindorka	190	895
Hrútmúlavirkjun	Vindorka	85	300
Vindheimavirkjun	Vindorka	40	130
Mosfellsheiðarvirkjun 1	Vindorka	75	285
Mosfellsheiðarvirkjun 2	Vindorka	75	290
Mýravirkjun	Vindorka	10	39
Hálsvirkjun	Vindorka	75	310
Lambavirkjun	Vindorka	250	1055
Hrútavirkjun	Vindorka	75	270
Austurvirkjun	Vindorka	200	775
Klausturselsvirkjun	Vindorka	250	910
Slýjavirkjun	Vindorka	75	280
Keldnavirkjun	Vindorka	30	93
Sólheimar	Vindorka	162.4	668
Grímsstaðir	Vindorka	134	577
Norðanvindur	Vindorka	62	234
Þorvaldsstaðir	Vindorka	45	166
Reykjanesgarður	Vindorka	100	400
Haukadalsgarður	Vindorka	100	400
Reyðarárgarður	Vindorka	50	200
Nónborgir	Vindorka	100	400
Vindorkugarður í Garpsdal	Vindorka	88.2	366.3
Sandvíkurheiðarvirkjun - sunnanverð	Vindorka	110	440
Butra	Vindorka	18	78
Alviðra	Vindorka	50	108
Brekknaheiði	Vindorka	220	880
Sauðanesháls	Vindorka	100	340
Langanesströnd	Vindorka	160	700
Viðvíkurheiði	Vindorka	50	190
Bakkaheiði	Vindorka	110	440
Foss í Hrunamannahreppi	Vindorka	56	291
Tjörn á Vatnsnesi	Vindorka	56	297
Múli í Borgarbyggð	Vindorka	72.8	367

3300 MW!

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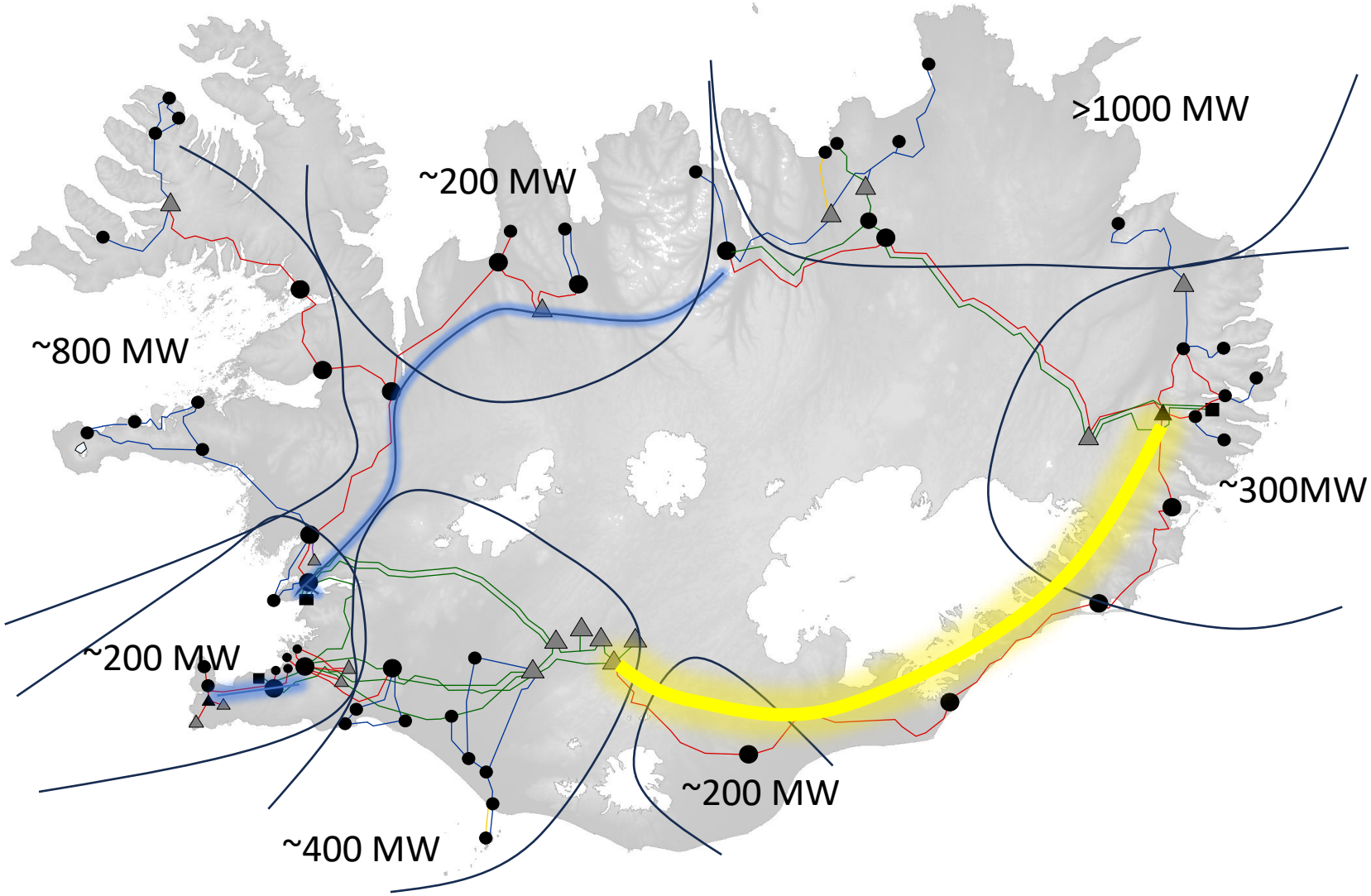
Vindorkuáform og flutningskerfið



2050?

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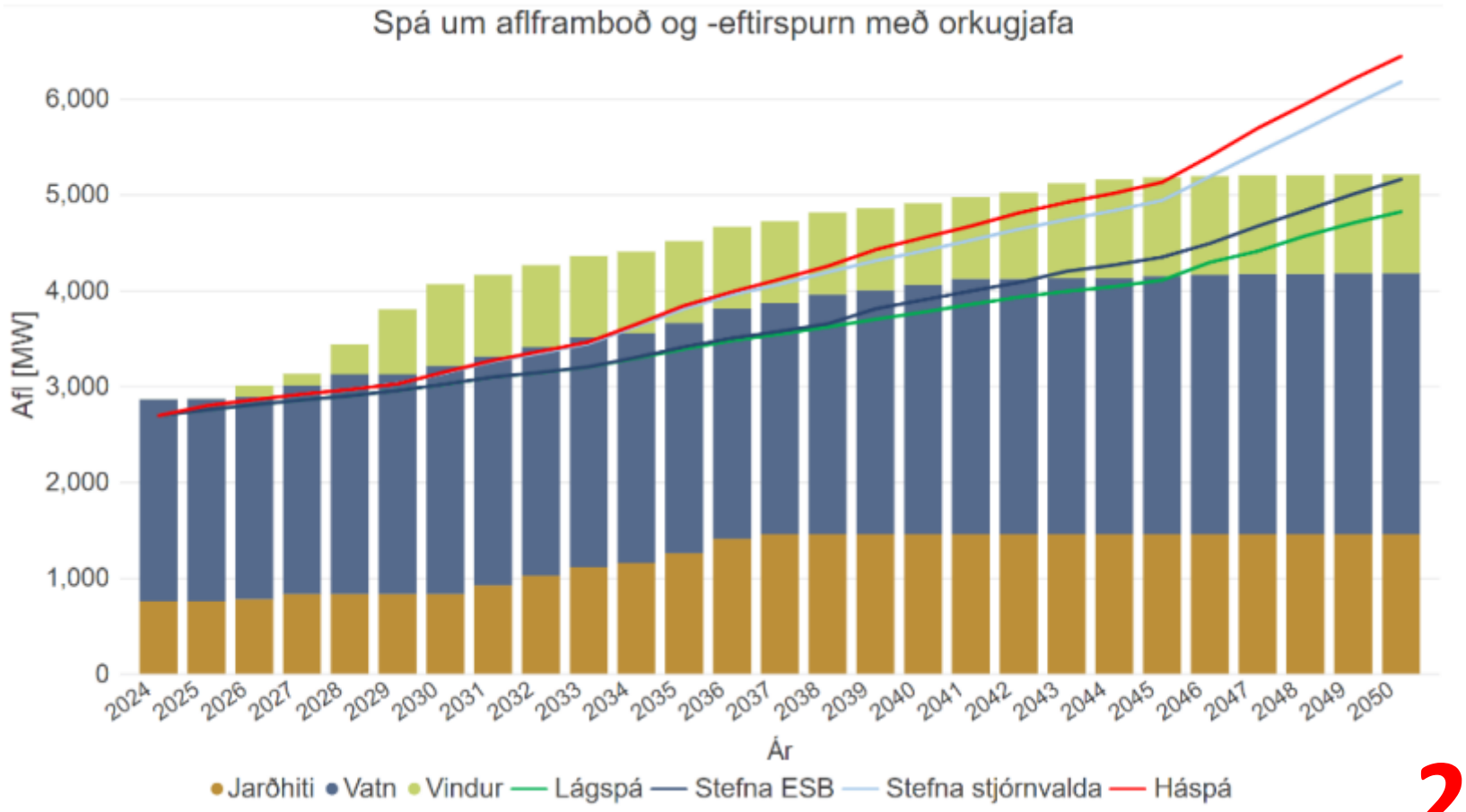
Raforkuspá Landsnets



2000 MW+

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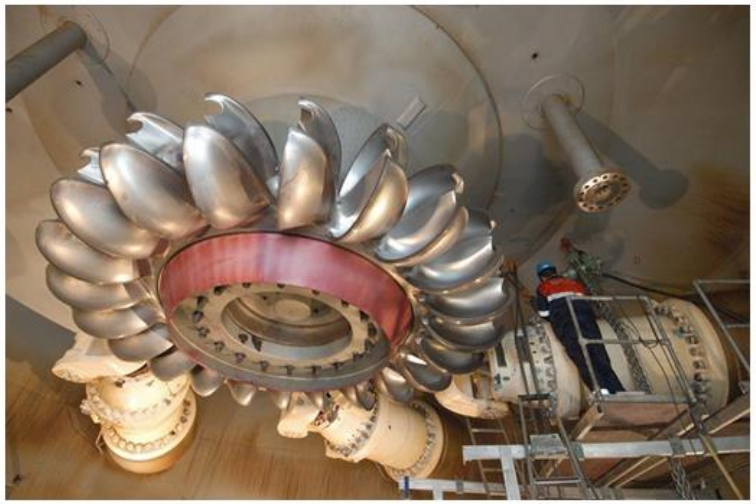
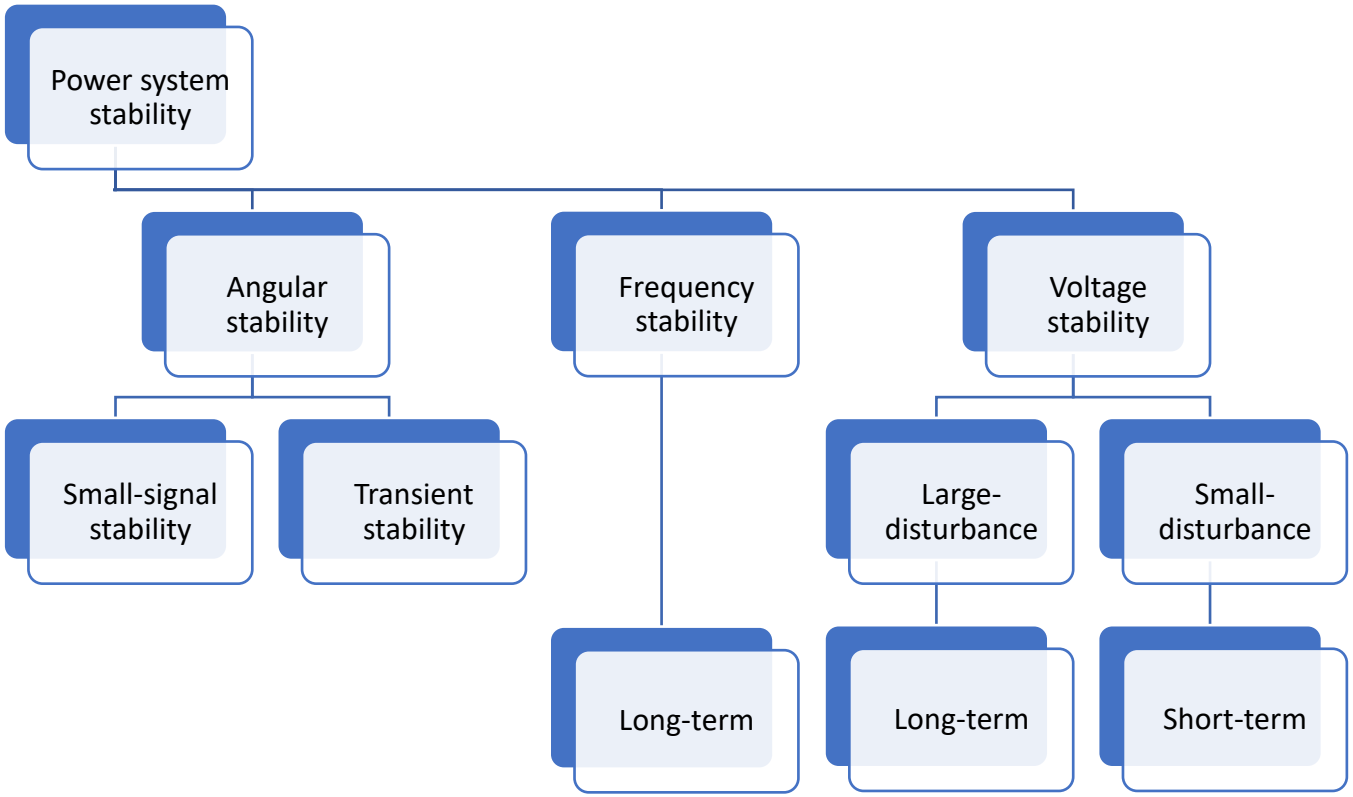
Nýr veruleiki – nýjar aðferðir



Nýr veruleiki – nýjar aðferðir

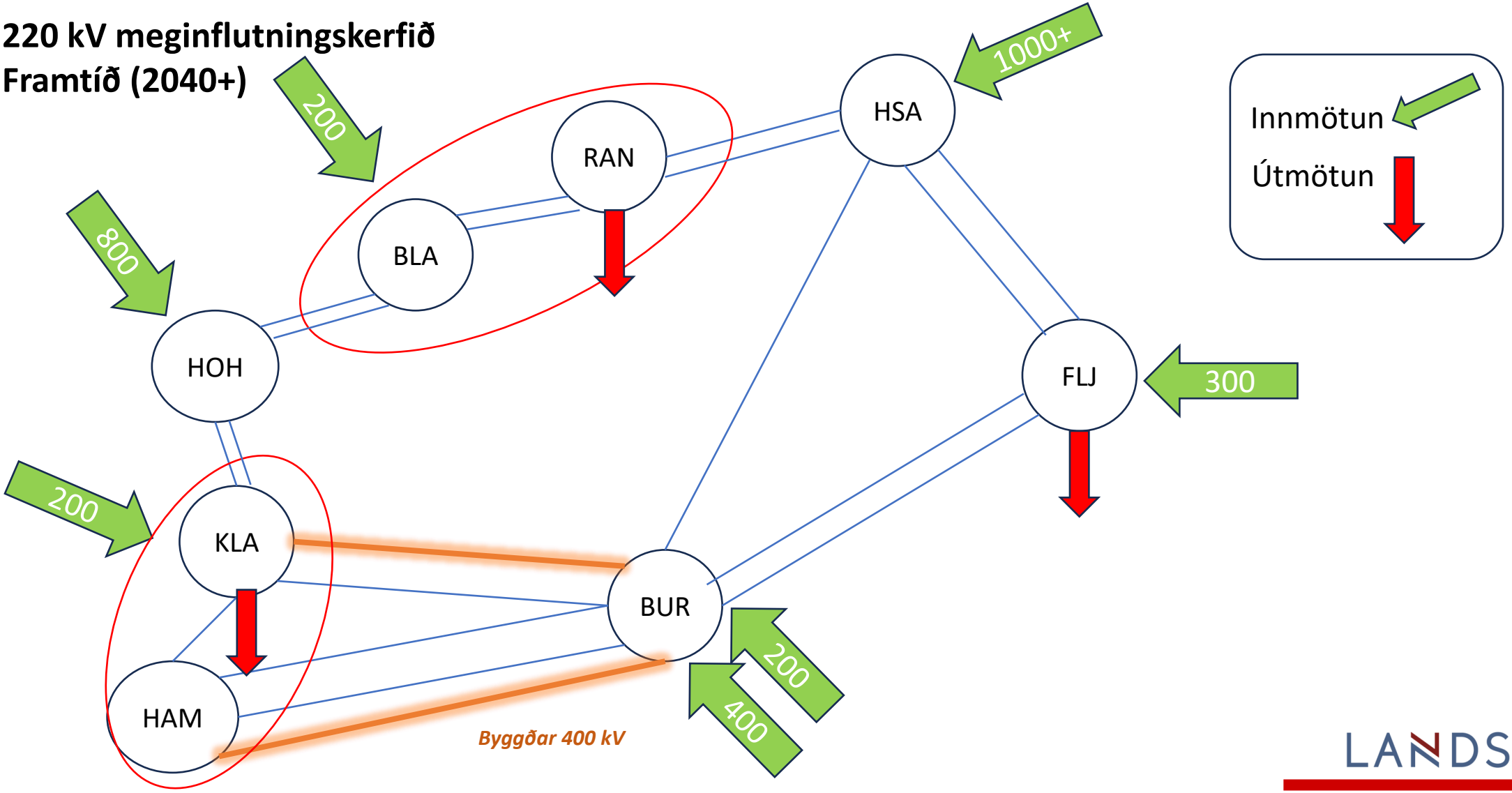


Hvað getum við gert?

- Kerfisuppbygging
  - Klára hringinn – er það nóg?
  - Meiri möskvun?
  - Tvöföldun hringsins (a.m.k. að einhverju leyti)?
- Tæknilausnir
  - Synchron condenser (aukið skammhlaupsafl)
  - Grid-forming
  - Frekari snjallvæðing kerfisins
  - Annað?
- Kerfisrekstur - Markaðslausnir
  - Sveigjanlegt álag
  - Sveigjanleg orkuvinnsla
  - Staðsetningarhvatar
  - Rafhlöður – hver á og til hvers?
  - Kröfur til aðila á markaði (netmáli)

Kerfisuppbygging

220 kV meginflutningskerfið
Framtíð (2040+)



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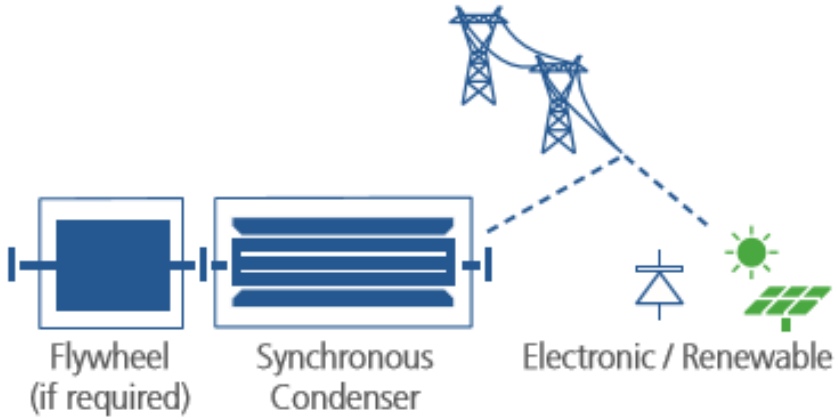
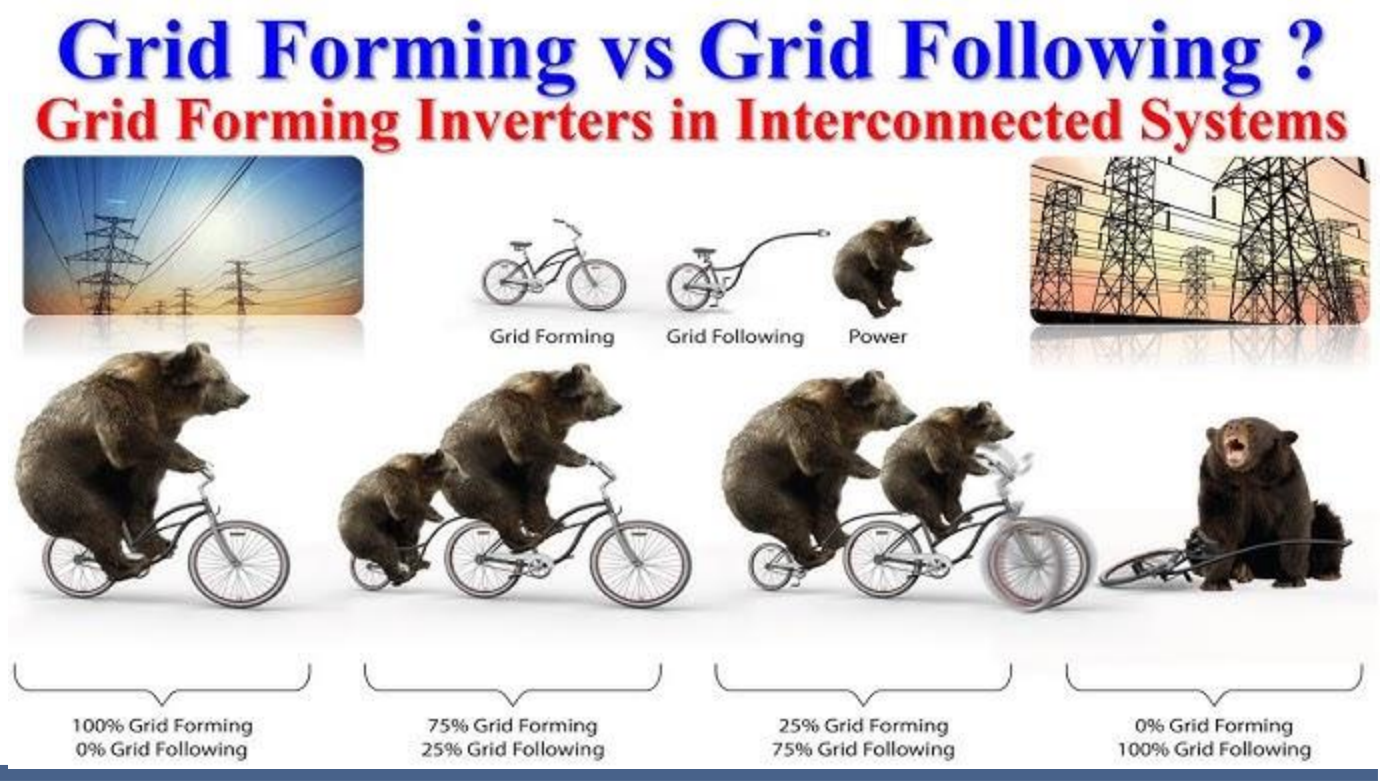
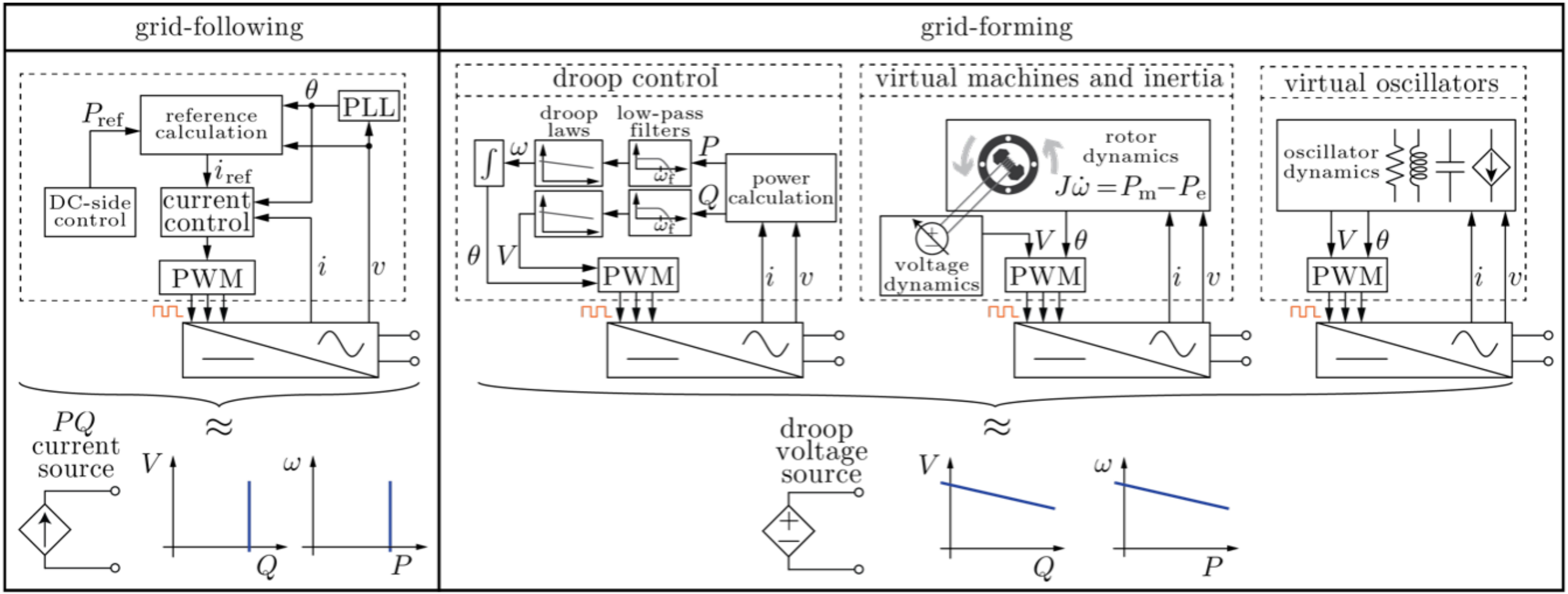
Tæknilausnir – nýjar aðferðir

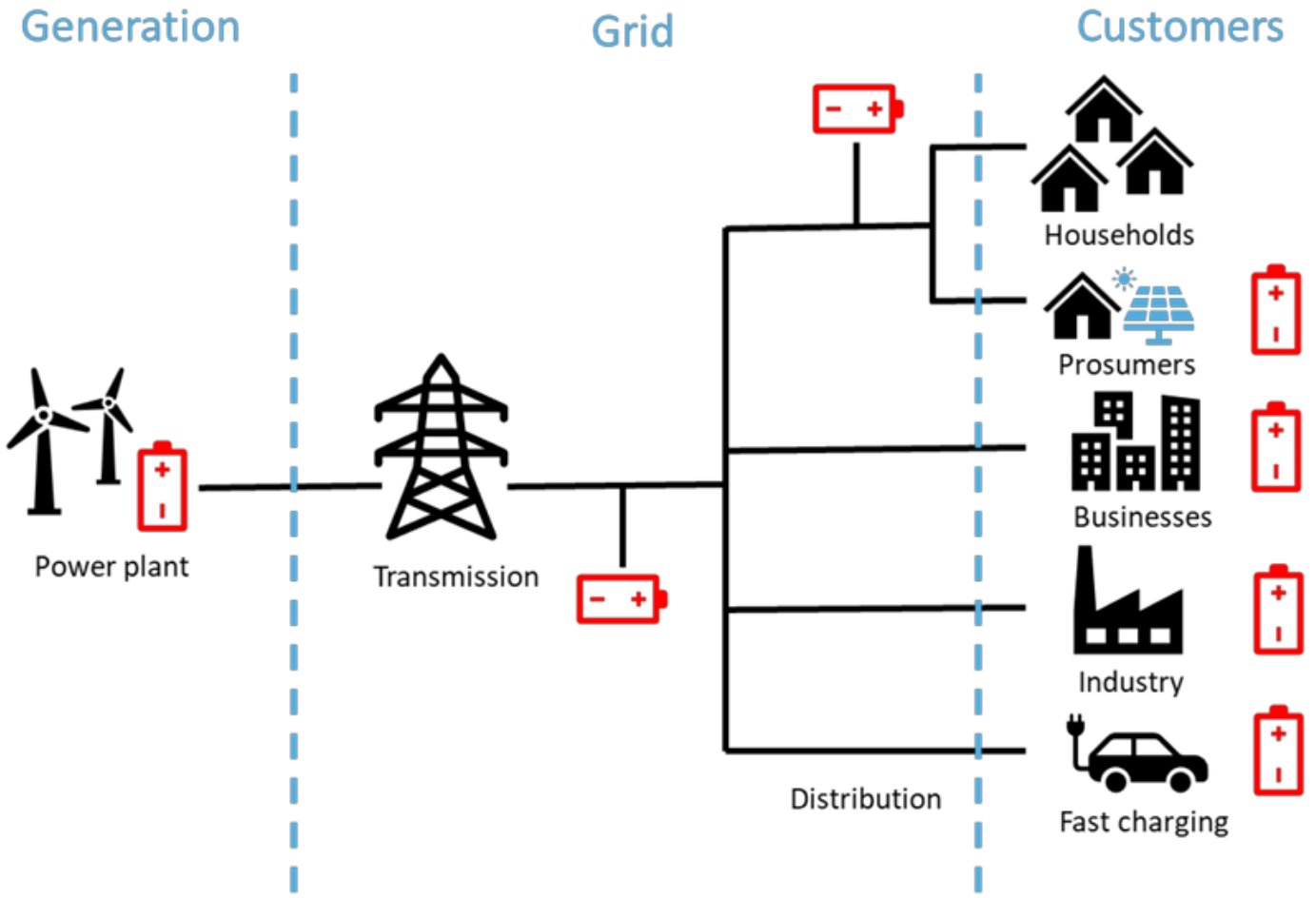




Tæknilausnir



Markaður – nýir notendur



Nýr veruleiki

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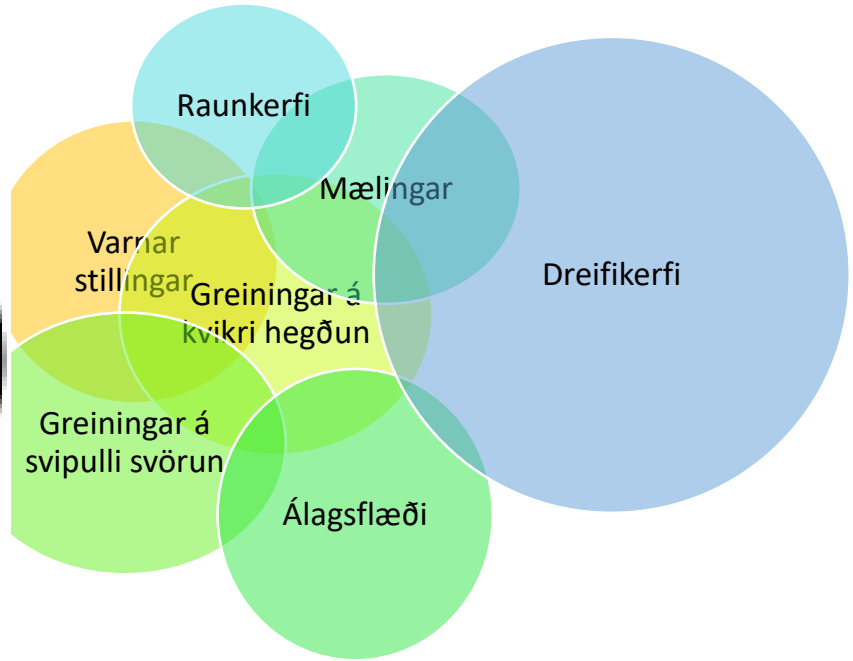
Nýr veruleiki



Ein lausn, eða hvað?

FYLGSTU MEÐ LANDSNETI Á SAMFÉLAGSMIÐLUM

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