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Simplifying Funding Conditions for Competitive Tenders: More Energy Savings with less Paperwork

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- The funding program **ProKilowatt** by the Swiss Federal Office of Energy
- Tendering scheme
- Simplified conditions:
 - Reference scenario abandoned, new simplified approach
 - Age of equipment no longer relevant
- Impact on funding
- Conclusions

- ...is a funding program for electricity saving measures
- ...only funds measures that would not be implemented without financial support (principle of “additionality”)
- ...started in 2010
- Private and public entities are entitled to apply for funding
- www.prokilowatt.ch

Pumps, Ventilation



Motors



Refrigeration



Lighting





<https://agrocleantech.ch/de/fuer-landwirte/förderprogramm-ferkelnester.html> (cutest example)



Conditions &
eligibility criteria
(~30 pages)

3.2
2.1
3.6

Not
eligible

• Calls for Competitive Tenders

2 calls for projects each year

- Eligible measures with lowest cost per kWh saved
- To keep competitive pressure, the allocated budget must be at least 20% lower than the total requested budget.
- Allocated budget 8 – 38 Mio. € per year. So far 424 projects and 138 programs supported with 170 Mio. € total.
- The overall legal framework for the competitive tenders is laid down in the Swiss Energy Ordinance (730.01 Energieverordnung, EnV) based on the Swiss Federal Energy Law (730.0 Energiegesetz, EnG).

€cents/kWh

1.6
2.3
2.9
2.9
3.5
4.1
4.6
5.5
7.2

Out of
budget

Annual Updates of Conditions

- (1) To adapt to technical progress, market situation and legal developments
- (2) To **simplify**, to reduce effort

Example:

		2014	2015	2016	2017	2018
Street lighting	Luminous efficiency	$\geq 80 \text{ lm/W}$	$\geq 95 \text{ lm/W}$	$\geq 100 \text{ lm/W}$	$\geq 105 \text{ lm/W}$	Excluded from funding
	Requirements	Tap-change operation (new constructions)	Intelligent control (new constructions)	Intelligent control (replacement)	Intelligent control (replacement)	
	Exclusion	-	-	Replacement of mercury vapour lamps	Replacement of LED or mercury vapour lamps	

History of General Conditions

	2014	2015	2016	2017	2018
Maximum funding rate	between 20 - 40%		between 15 - 40%		30%
Maximum funding rate depending on	Payback time		Age of equipment to be replaced		--
Ranking criteria in tender	80% cost-effectiveness 20% innovative character	100% cost-effectiveness			
Distinction between type of investments	New construction – renewal/premature replacement – additional investment		Renewal/premature replacement – additional investment		
Minimum payback time	Projects > 5a Programs n.a.	Projects > 5a Programs > 2a	Projects > 4a Programs > 4a		
Cost-effectiveness	-	< 15 Rp./kWh (13.64 €-ct/kWh)		< 8 Rp./kWh (7.27 €-ct/kWh)	
Exclusion	-		New installations		
	-	Energetic measures for reducing the heat demand of a building, households appliances			

Key Changes of Conditions



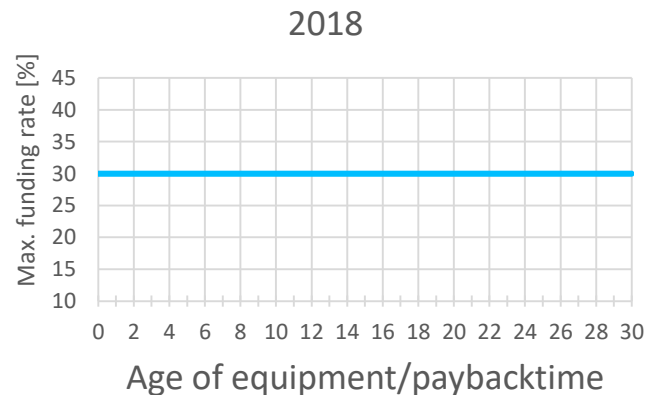
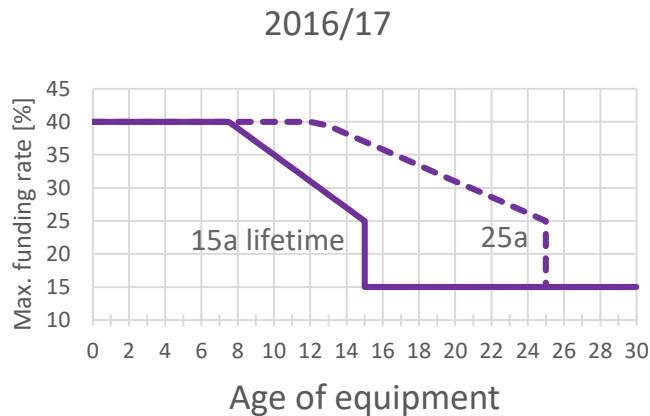
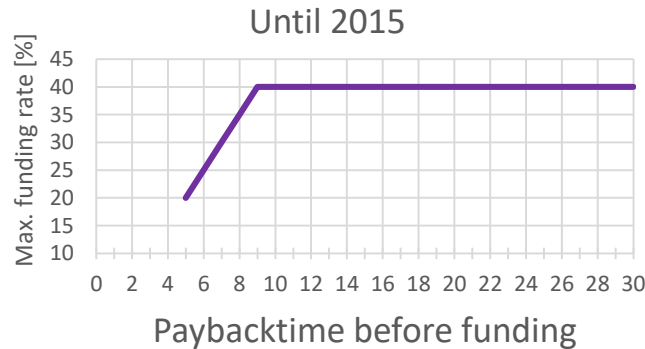
2015 → 2016

- **Reference scenario abandoned, new simplified approach:**
 - Comparison old to new equipment
 - Uniform deduction of electricity savings by 25%
 - As a result, new installations excluded from funding (Ø 3.4% of project applications)
- **Maximum funding rate**
 - Depending on age of equipment instead of payback time

2017 → 2018

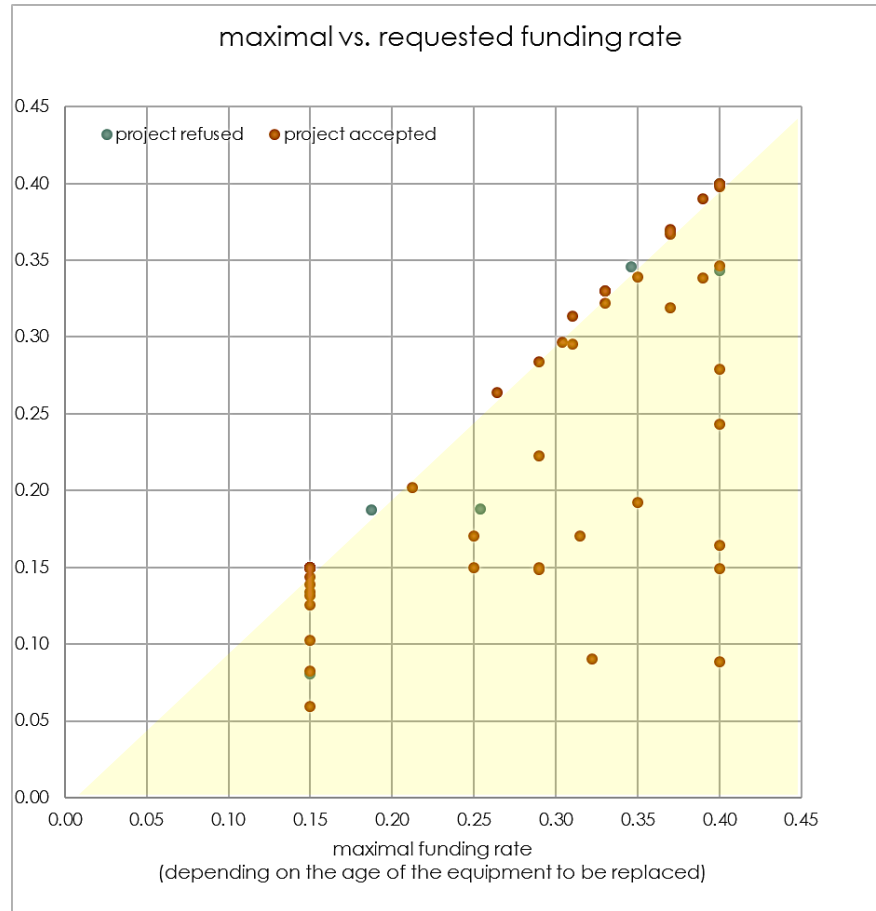
- **Age of equipment no longer relevant**
 - Maximum funding rate uniformly set at 30%
 - No more tedious age determination
 - As a result, more measures on older equipment are triggered

Simplified Maximum Funding Rate 2018



Analysis of projects 2016

- Majority did not request the maximum funding rate possible, but a lower rate
- Reason: competition for low €-cents/kWh
- Ø funding rate 22%



Impact of Changed Funding Conditions



- **Compressed air system** (change of compressor)
- Project costs: 339,910 €
- Assumed lifetime 15a

	2015	2016	2018
Max funding rate	Pbt:11a 40%	Age: 11a 33,75%	30%
Max funding amount	135,964 €	115,569 €	101,973 €
Funding requested	135,964 €		
Cost-effectiveness	2.4 ct/kWh	2.0 ct/kWh	2.4 ct/kWh

- Measures for optimization of **cooling system**
- Project costs: 616,695 €
- Assumed lifetime 15a

	2015	2016	2018
Max funding rate	Pbt:14.5a 40%	Age: 24a 15%	30%
Max funding amount	246,678 €	84,095 €	185,008 €
Funding requested		84,095 €	
Cost-effectiveness	5.9 ct/kWh	3.8 ct/kWh	5.9 ct/kWh

- **Compressed air system** (change of compressor)
- Project costs: 272,727 €
- Assumed lifetime 15a

	2015	2016	2018
Max funding rate	Pbt:8.7a 37%	Age: 22a 15%	30%
Max funding amount	100,909 €	40,909 €	81,818 €
Funding requested		40,909 €	
Cost-effectiveness	4.0 ct/kWh	2.8 ct/kWh	4.0 ct/kWh

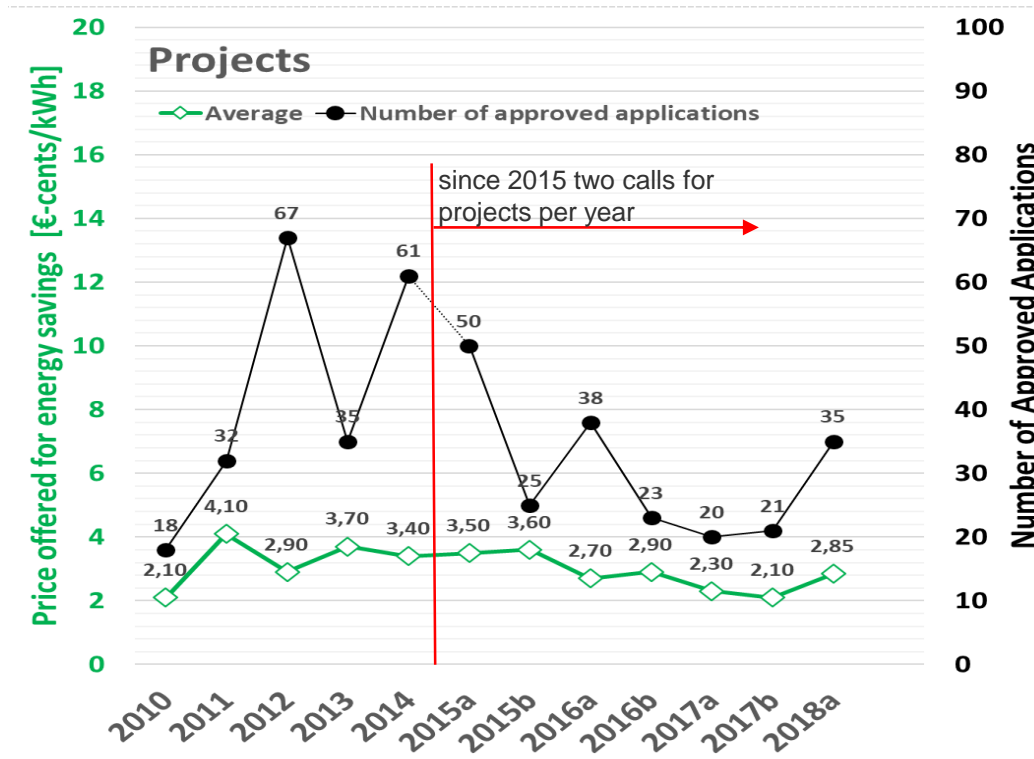
- Replacement of **cooling system** + NH3 refrigerant
- Project costs: 824,236 € (*125,182 €)
- Remaining useful life: 5a

	2015	2016	2018
Max funding rate	Pbt: 12.8 *40%	Age: 15a 25%	30%
Max funding amount	50,073 €	206,059 €	121,788 €
Funding requested	50,073 €		
Cost-effectiveness	4.3 ct/kWh	12.3 ct/kWh	7.3 ct/kWh

Fixed exchange rate 1 € = 1.10 CHF used for conversion for all years

Number of Successful Applications and Average Price of Energy Savings (€-cents/kWh)

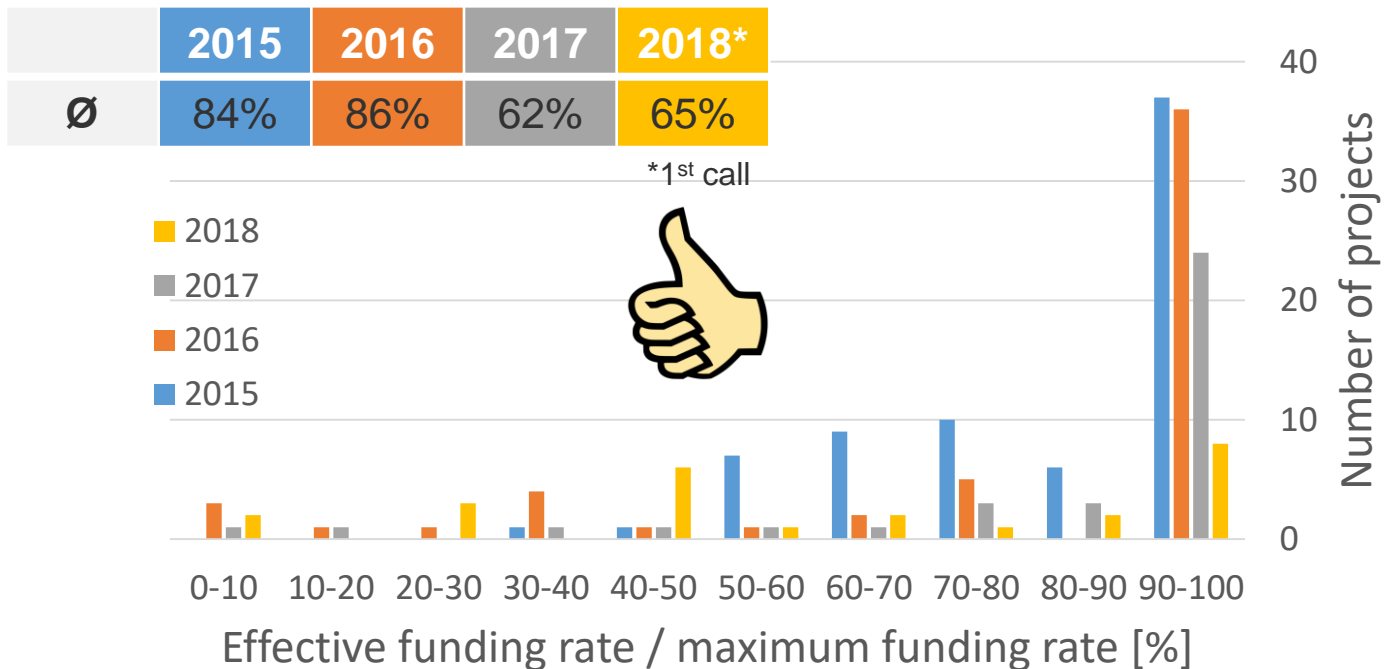
- Competition keeps price for savings stable over time



Note: conversion 1 € =
1.10 CHF used for all
years in all slides

Effective and Maximum Funding Rates

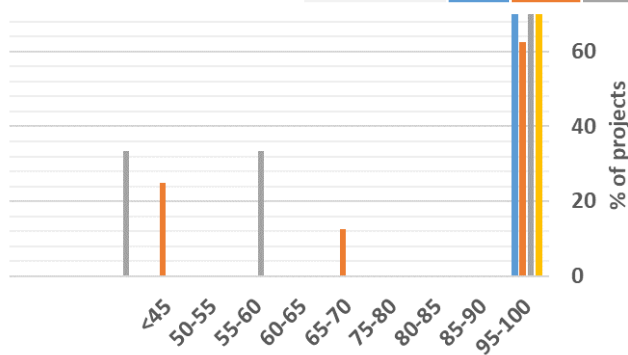
- The fixed maximum funding rate has not lead to a higher ratio of requested funding to maximum funding (2018: no significant increase).



Effective and Maximum Funding Rates – Per Technology

	2015	2016	2017	2018*
No. of projects	3	3	3	1
Ø	99%	100%	89%	97%

Compressed Air Systems

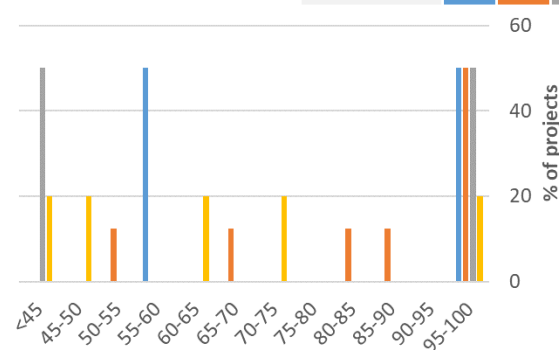


Effective funding /maximum funding rate [%]

*1st call

	2015	2016	2017	2018*
No. of projects	2	8	2	5
Ø	77%	86%	70%	61%

Cooling systems



Effective funding /maximum funding rate [%]

- Number of projects too low for conclusions
- One possible observation from this kind of analysis: more economic measures enable higher funding request by staying cost competitive
- Expectation: projects on compressed air systems are more economic than projects on cooling systems (high complexity) → therefore they would tend to request maximum funding more often

Average Funding Rate of the Program



- No significant increase of the average funding rate (ratio of program funding to total investments for implementation of energy efficiency measures) was observed after the conditions had been simplified.
- In fact, 2018 (1st call) showed a decrease. One possible reason could be that street lighting was excluded from funding.

2010	2011	2012	2013	2014	2015	2016	2017	2018*
27%	22%	27%	27%	18%	18%	22%	19%	13%

*1st call



Conclusions

- Continued updating of funding conditions is necessary to adapt to market conditions, legal developments and technical development.
- Simplification of funding schemes by reducing complexity, required data, and number of diverging factors by technology makes funding programs more attractive for applicants even at similar funding height.
- Careful analysis has shown that simplifications have minor impacts on overall outcome for the funding agency and the applicants.
- The first call for projects in 2018 showed that (1) more projects replacing older equipment were activated, (2) the average funding rate decreased, and (3) the cost per kWh saved did not significantly increase.
- To protect against significant deadweight effects, eligibility limits can be included and keeping simplicity of the approach (e.g. excluding street lighting for calls from 2018).
- Possible redistributive effects and further outcomes will be monitored in the future.

You can contact us for further questions



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