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Date
1 November 2016

Asia
India
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F.I.T.T. for investors

Time for an Upgrade

Retirement policy to trigger next capex cycle and multi-year high utilisation

The state power sector plans to retire an unprecedented 36GW of old, inefficient and polluting capacity over the next six years, 11x the historical annual average. This is 18% of current capacity and will raise utilisation (PLF) by 5-7pps to multi-year highs of 81% by FY21e. Power shortages could return earlier than expected by FY20-21e, but efficiency will improve as sub-optimal units are shut. Hence, we see two compelling themes:- 1) higher load factors producing strong volume growth and a +70% jump in OCF over FY16-19e– NTPC to benefit disproportionately; and 2) the urgent need for replacement cycle will jump-start the PSU capex– BHEL is the biggest beneficiary.

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Retirement policy to trigger next capex cycle and multi-year high utilisation

The state power sector plans to retire an unprecedented 36GW of old, inefficient and polluting capacity over the next six years, 11x the historical annual average. This is 18% of current capacity and will raise utilisation (PLF) by 5-7pps to multi-year highs of 81% by FY21E. Power shortages could return earlier than expected by FY20-21E, but efficiency will improve as sub-optimal units are shut. Hence, we see two compelling themes:- 1) higher load factors producing strong volume growth and a +70% jump in OCF over FY16-19E– NTPC to benefit disproportionately; and 2) the urgent need for replacement cycle will jump-start the PSU capex – BHEL is the biggest beneficiary.

Why retirement? Substantial savings for state utilities, better efficiency

India is planning a retirement policy to dispose of 18% of India's coal-fired old capacity (36GW) over 5-6 years, starting with 6GW (2.2%) by Mar'17. Stringent new pollution norms and a coal linkage transfer policy have been instigated to hasten the retirement. Retirement will lower coal consumption by ~30% and will also cut pollution and reduce the tariff burden for state utilities.

Replacement is warranted and pressing

The states' role in power generation is declining and will trigger a new capex cycle, for energy security. Additionally, with shut-downs we estimate annual requirement of 19-22GW projects to avoid power shortages. Government (CEA) estimates corroborate the requirement of 24GW annually. Rising PLFs should exceed the 2008 peak by FY19-20e, necessitating further investments now – as the power project cycle is six years from concept to commissioning.

Stage-I Capacity utilisation recovery to benefit utilities (Prefer NTPC)

With higher retirement and lower supply addition (just a 2% CAGR over FY17-22E) – we believe capacity utilisation rates are likely to stage a strong recovery. We raise PLF estimates for utilities by 2-3pps beginning FY18E. With 37% volume growth over four years and valuations still at a c20% discount to the historical average, the sector looks attractive. We prefer NTPC and raise our target price by 8% on higher utilisation rates. NTPC offers an attractive growth profile given its competitive position in the cost curve. We include Powergrid and CESC in our preferred Buys and raise RPL to Hold (on underperformance). JSWE and Adani face headwinds from rising imported coal prices.

Stage-II - Capex recovery and new capacity additions (Prefer BHEL)

Our blue-sky scenario points to 80%+ upside in 1.5-2 years for BHEL – we raise the medium-term growth outlook and target price to INR200. We maintain Sell on TMX, SIEM and ABB due to the slowdown in T&D, weak non-power (or Industry) orders and higher material costs, but life-time high valuations. New capex for power would have to begin over the next 12-24 months, if future power shortages are to be avoided. Capacity retirement, reduced project pipeline and economic recovery could lead to a faster-than-expected revival.

Valuation using combination of DCF and P/B; key risks

A key risk factor is the falling cost of solar power storage, which has a distant potential to disrupt coal-based investments. We value utilities on a combination of DCF and P/B. Key risks are fuel prices, execution timelines, and delay in a demand recovery. For Industrials, we use DCF valuations. Key risks are sharp change in industry investments, export revival, RM prices.

Key Changes

Company	Target Price	Rating
NTPC.BO	185.00 to 200.00(INR)	-
CESC.BO	775.00 to 810.00(INR)	-
RPOL.BO	42.00 to 45.00(INR)	Sell to Hold
BHEL.BO	180.00 to 200.00(INR)	-

Source: Deutsche Bank

Top picks

NTPC Limited (NTPC.BO),INR150.75	Buy
BHEL (BHEL.BO),INR138.80	Buy

Source: Deutsche Bank

Companies Featured

NTPC Limited (NTPC.BO),INR150.75	Buy
CESC Ltd (CESC.BO),INR640.00	Buy
NHPC (NHPC.BO),INR26.90	Buy
Power Grid Corporation (PGRD.BO),INR174.75	Buy
Tata Power (TTPW.BO),INR78.10	Buy
BHEL (BHEL.BO),INR138.80	Buy
Thermax Limited (THMX.BO),INR864.40	Sell
Reliance Power (RPOL.BO),INR47.15	Hold
Adani Power (ADAN.BO),INR27.25	Hold
JSW Energy (JSWE.BO),INR65.75	Hold
Siemens India Ltd (SIEM.BO),INR1,189.90	Sell
ABB Ltd India (ABB.BO),INR1,097.10	Sell

Source: Deutsche Bank

This report changes ratings, price targets, and estimates for several companies under coverage. For a detailed listing of these changes, see page 5.

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Executive summary

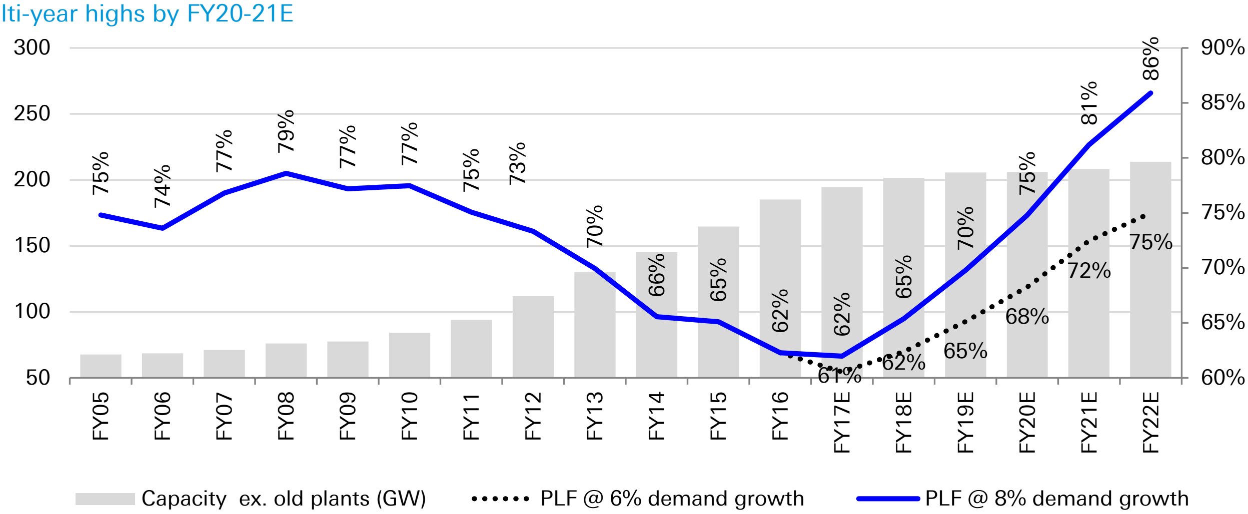
** Two compelling themes: a) **Stage I Utilisation recovery** – Utilities to see volume growth of 37% over four years and we expect a +70% jump in OCF over FY19e/16– we prefer NTPC to outperform industry growth; b) **Stage II capex recovery** – replacement drive to jump start capex from PSUs, with states looking for energy security – BHEL is a direct beneficiary.

** India is planning a retirement programme to dispose of 18% of India's old coal-fired capacity (36GW) over six years, which is beyond its useful life. The programme is likely to start with 6GW (2.2%) by Mar'17.

** We estimate that Indian PLFs could exceed 2008 highs of 79% by FY20-21e, a year earlier and touch 86% by FY22e, with shutdowns. This will necessitate a replacement cycle or capex recovery which we estimate will begin next year.

Utilisation recovery theme for Utilities

Figure 1: All India coal PLF – could increase by 5-7pps if old plants are shut down, to reach 86%, exceeding previous multi-year highs by FY20-21E



Source: CEA, Deutsche Bank estimates

Figure 2: Power generation capacity – we assume higher shutdowns in our India demand supply model

Capacity	Units	FY13	FY14	FY15	FY16	FY17E	FY18E	FY19E	FY20E	FY21E	FY22E
Capacity (GW)		-				-					-
- Coal	GW	130	145	165	185	195	202	206	206	208	214
- Hydro	GW	39	41	41	43	45	46	48	48	49	51
- Other Conventional	GW	26	28	30	31	34	34	34	36	36	36
Total	**GW**	**196**	**214**	**236**	**259**	**273**	**282**	**288**	**290**	**294**	**301**
% increase		12%	9%	10%	10%	5%	3%	2%	1%	1%	2%
Gross addition	GW	21	18	23	24	20	15	12	8	10	13
Retirement	GW	-1	-1	0	-1	-6	-6	-6	-6	-6	-6
Renewable Energy	GW	28	32	36	43	54	63	74	86	98	110
Total Power Capacity	**GW**	**223**	**245**	**272**	**302**	**327**	**345**	**362**	**376**	**392**	**411**

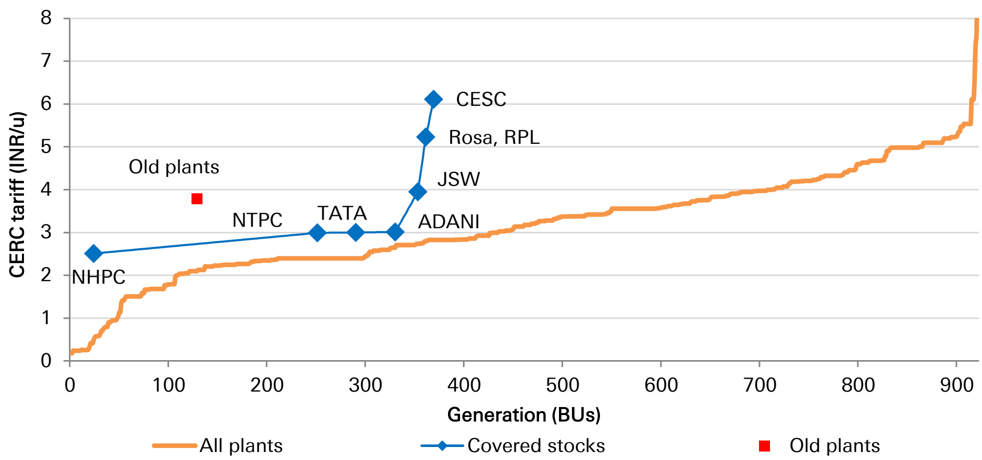
Source: CEA, Deutsche Bank

Figure 3: Rising PLFs should lead to strong earnings/ROE growth – we assume up-trend to start from FY18E

Companies	TP	Capacity	PLF (%)				FY18e on +2% PLF			FY18e on +5% PLF		
	(INR/sh)	(MW)	FY16	FY17E	FY18E	FY19E	TP (%)	EPS (%)	ROE (bps)	TP (%)	EPS (%)	ROE (bps)
NTPC	200	46	78%	78%	80%	82%	2%	2%	20bps	4%	4%	49bps
NHPC	30	6.5	45%	46%	46%	44%	2%	2%	14bps	4%	4%	33bps
Adani Power	27	10.4	74%	78%	81%	80%	12%	-83%	297bps	29%	-221%	748bps
JSW Energy	70	4.5	61%	68%	70%	72%	4%	5%	46bps	10%	13%	115bps
Tata Power	90	8.1	73%	76%	77%	80%	1%	0%	0bps	2%	0%	0bps
Reliance Power	45	5.9	82%	87%	90%	90%	8%	7%	45bps	19%	17%	111bps
CESC	810	2.3	61%	59%	66%	68%	-3%	8%	73bps	-2%	10%	85bps

Source: Deutsche Bank

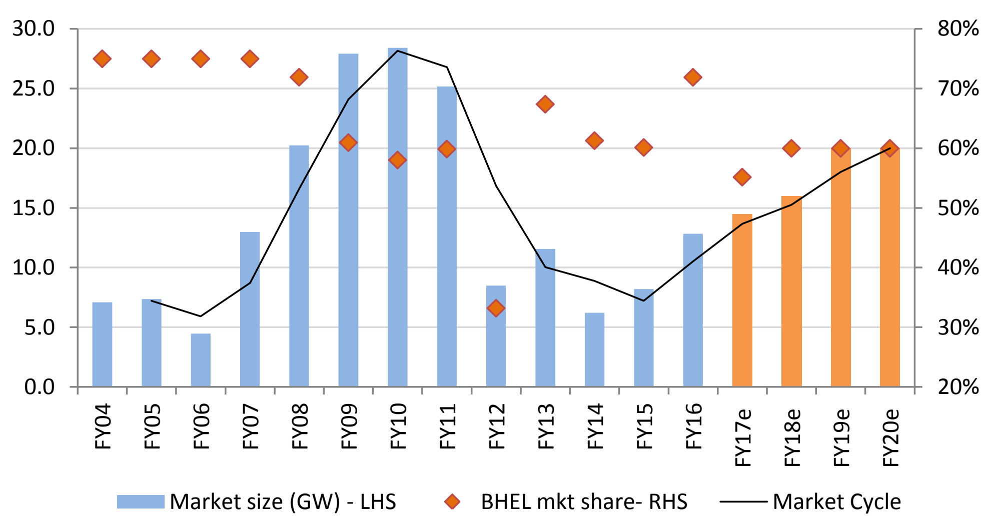
Figure 4: Cost curve analysis favours NTPC – could gain market share with low-cost advantage on shut-down of old projects



Source: Deutsche Bank, CEA data (2014 data on load-curve)

Capex recovery theme for Industrials

Figure 5: 5-year boom-bust cycle points to recovery in ordering activity, on the back of replacements



Source: Deutsche Bank, BHEL, market data

Figure 6: India will need c.20GW/pa coal capacity addition to meet a conservative 7% demand growth

	Units	Conservative	Base-Case	Comments
Peak Demand- FY16	GW	155	155	
Peak Demand- FY20e	GW	200	200	
Power demand growth	%	7	8	
Incremental demand	GW	14	16	
AT&C Loss - FY20	%	19%	20%	24% as of Mar'15
Availability	%	90%	90%	
Auxiliary Consumption	%	7%	7%	
Gross Capacity required	**GW**	**21**	**24**	**per annum**
Solar/RE annual addition	GW	10	8	
Gross coal capacities required	**GW**	**19**	**22**	**per annum**

Source: Deutsche Bank estimates

Summary of change in ratings and estimates

Figure 7: We assume higher PLF for utilities sector

	Actual	New estimates			ppts change		
	FY16	FY17E	FY18E	FY19E	FY17E	FY18E	FY19E
NTPC	78	78	80	82	0.0	2.2	2.4
Tata Power	73	76	77	80	0.3	1.1	1.5
Reliance Power	82	87	90	90	0.0	1.5	1.5
CESC	61	59	66	68	0.0	1.7	1.7

Source: Deutsche Bank estimates, company data

Figure 8: Consequently, raising TP and upgrading RPL to a Hold

Stock	Rating		Target Price (INR/sh)			CMP	Upside/(Downside)	Remarks
	Revised	Old	Revised	Old	% Change	(INR/sh)	%	
NTPC	Buy	Buy	200	185	8	151	33%	Raised PLF, but 1.6GW shut-down in 3-_years
CESC	Buy	Buy	810	775	5	640	27%	Raised PLF for FY18/19, but cut Chandrapur in FY17
BHEL	Buy	Buy	200	180	11	139	44%	Raised medium-term growth FY20-25 to 15%
Reliance Power	Hold	Sell	45	42	7	47	-5%	Raised PLF
Adani Power	Hold	Hold	27	27	0	27	-1%	No change
JSW Energy	Hold	Hold	65	65	0	66	-1%	No change
Tata Power	Buy	Buy	90	90	0	78	15%	No change

Source: Deutsche Bank

Figure 9: Change in earnings estimates

Stock	EPS - FY18E			EPS - FY19E		
	Revised	Old	% chg	Revised	Old	% chg
NTPC	15.3	14.8	3%	18.4	17.9	3%
Power Grid	17.6	17.6	0%	20.2	20.2	0%
NHPC	3.0	3.0	0%	3.0	3.0	0%
Adani Power	(0.7)	(0.7)	0%	(0.1)	(0.1)	0%
JSW Energy	6.4	6.4	0%	6.5	6.5	0%
Tata Power	7.1	7.0	2%	8.2	7.9	3%
Reliance Power	6.1	6.1	1%	5.6	5.6	1%
CESC	65.5	69.3	-6%	81.7	NA	NA

Source: Deutsche Bank

India Utilities and Industrials – valuations comp

Figure 10: India Utilities and Industrials coverage valuation snapshot

Company/Sector	Mcap. (INR bn)	Recom	TP (INR/sh	Up/ (down)	P/E (x)		EV/EBITDA(x)		P/B (x)		ROE (%)		EBITDA CAGR	EPS CAGR	BV CAGR
					17E	18E	17E	18E	17E	18E	17E	18E	16-19E	16-19E	16-19E
UTILITIES COVERAGE															
NTPC	1,243	Buy	200	33%	12	10	12	10	1.3	1.2	11	13	24%	16%	8%
Power Grid	914	Buy	200	14%	12	10	9	8	1.9	1.6	17	18	19%	21%	13%
NHPC	298	Buy	30	12%	10	9	8	7	0.9	0.9	10	10	7%	7%	4%
Average - Regulated	**2,455**				**11**	**10**	**9**	**8**	**1.4**	**1.2**	**13**	**13**			
Adani Power	91	Hold	27	-1%	n/a	n/a	8	8	1.3	1.4	-9	-4	-4%	-141%	-3%
JSW Energy	108	Hold	65	-1%	13	10	6	6	1.2	1.1	10	11	-3%	-5%	6%
Tata Power	211	Buy	90	15%	15	11	6	5	1.3	1.2	9	11	8%	-6%	9%
Reliance Power	132	Hold	45	-5%	8	8	8	8	0.6	0.6	8	7	0%	5%	6%
CESC	85	Buy	810	27%	16	9	6	5	1.2	1.1	8	11	8%	44%	12%
Average - Private IPPs	**627**			**5%**	**13**	**10**	**7**	**6**	**1.1**	**1.1**	**5**	**8**			
Average - Utilities	**3,082**			**9%**	**12**	**10**	**8**	**7**	**1.2**	**1.1**	**8**	**10**			
INDUSTRIALS COVERAGE															
BHEL	340	Buy	180	30%	33	17	17	7	1.0	1.0	3	6	-233%	-237%	4.2%*
ABB India#	232	Sell	940	-14%	62	57	32	29	7.3	6.9	12	12	11%	20%	8.5%*
Siemens India#	424	Sell	1,050	-12%	68	50	39	29	7.9	7.6	12	16	17%	14%	9.7%*
Thermax	103	Sell	640	-26%	37	34	19	16	4.1	3.8	11	12	15%	10%	9.2%*
Voltas	127	Hold	310	-19%	29	26	20	17	4.7	4.1	17	16	16%	19%	8.3%*
Average - Industrials	**1,226**			**-8%**	**46**	**37**	**25**	**19**	**5.0**	**4.7**	**11**	**12**			

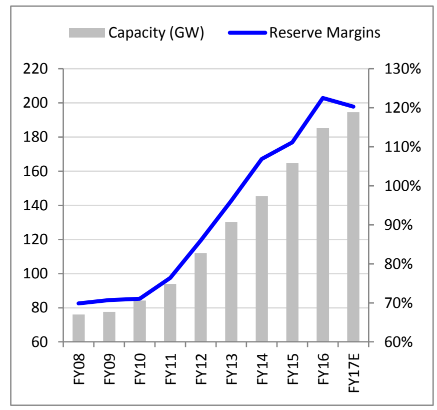
Source: Deutsche Bank; # Y/E is Dec for ABB and Sep for Siemens

India to see unprecedented capacity retirement

Many new, super-critical projects are shut, due to lower demand, whereas old, inefficient units are still operated by state utilities. Having moved from shortages to surpluses (120% reserve margin), India can now afford to end its love affair with old assets – in the wake of environmental concerns, new emission norms, and efficiency of coal usage. Power plants with a capacity of c.36GW, which burn c.100m mt/year of coal are likely to be retired in a phased manner.

Press reports (Platts) suggest around 6,000 MW (2.2%) of capacity is expected to be shut down in a first round by March 2017, citing CEA officials. The balance c.36GW (c.18%) could be retired in 5-6 years. These shutdowns are more than we expected at 1-1.5GW per annum (c11 GW in five years) – and equation of supply models will completely change for India.

Figure 11: Reserve margin looks supportive for old asset retirement



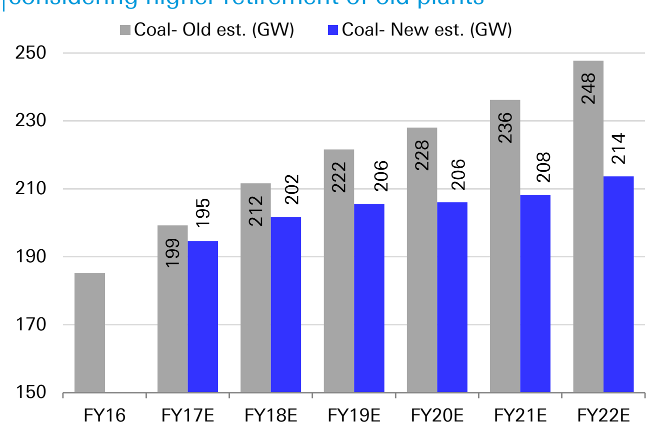
Source: Deutsche Bank, CEA data

Net capacity additions to be lower – given higher retirements

CEA has started retiring old assets at a much faster pace. Koradi, Maharashtra; Panipat, Haryana; and Cossipur, West Bengal have been shut down this year. A plan has been put in place to retire other old assets over five years, starting with 6GW (2.2%) by March 2017; and 36Gw c.18% of capacity by FY21-22. We revise our net capacity forecasts, as we assume higher retirements in our India demand-supply model. Net capacity addition is likely to be at just a 2% CAGR over FY17-22E, vs. 15% growth over the past five years.

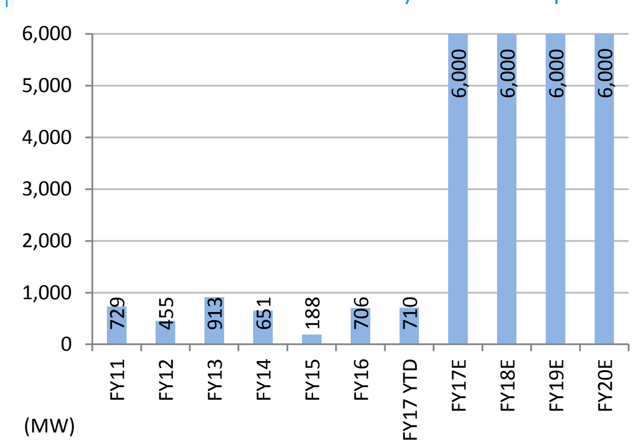
Net capacity addition is likely to be at just a 2% CAGR over FY17-22E, vs. 15% growth over the past five years.

Figure 12: We have reduced net coal capacity forecasts considering higher retirement of old plants



Source: CEA, Deutsche Bank estimates

Figure 13: We increase est. for retirement of old plants to 36GW from 11GW over the next 6-year forecast period



Source: CEA, Deutsche Bank estimates

Utilisation rates to improve 5-7pps on retirement policy

If old plants are shut, India's average PLF would increase to ~67%, or ~500bps higher

As per our deep-dive analysis of utilisation rates, heat-rate and tariffs of power projects in the country, if inefficient state projects of 34GW are removed from the base operating capacity, India's average PLF would increase to ~67%, or ~500bps higher than FY16's. Old projects are operating at sub-optimal ~40% PLF. The impact will be amplified in the future years as more and more capacity qualifies under old-assets and operates inefficiently, vis-à-vis the new projects. In effect, the love for stretching the old assets (because the fixed cost is lower) seems to be declining, as India moves towards to a more energy-efficient economy with concerns over availability of natural resources like land, water and coal taking centre stage.

Concerns over availability of natural resources like land, water and coal take centre stage

Figure 14: Coal PLF could increase by ~500bps if inefficient old plants are shut

FY16 data	Capacity (GW)	Generation (bn kWh)	PLF (%)
Central	38	242	72%
State	80	334	56%
Private	68	325	60%
INDIA	**186**	**956**	**62%**
Old Projects >25yrs	34	114	38%
India - Ex-Old State projects	**152**	**842**	**67%**
% change			4.8%

Source: Deutsche Bank calculations, CEA data

Indian PLFs could reach peak utilisation earlier than expected

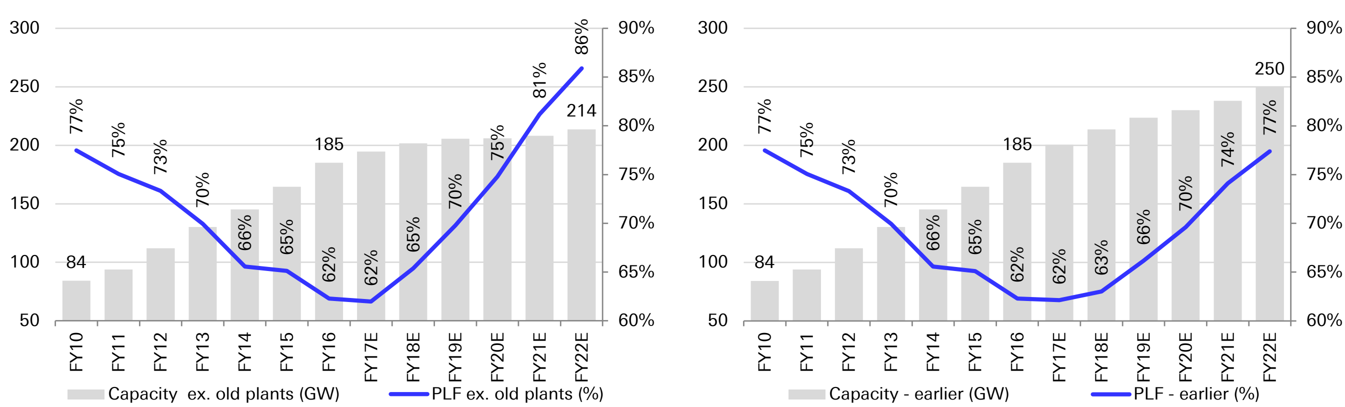
India PLFs could exceed 2008 highs of 78% by FY21e, a year earlier and touch 83% by FY22e

We estimate that Indian PLFs could exceed the 2008 peak of 78% by FY21e, a year earlier than our previous estimate, and touch 86% by FY22e, vs. our earlier estimate of 77%. On our new base case estimate for retirements (refer to the figures below) is based: a) on our new estimate of 5-6GW/pa retirement; and b) on our earlier estimate 0.5-1.5GW/pa.

Figure 15: All India coal PLF – earlier estimate

a) Coal PLF could rise by ~600bps if old plants are shut down, to reach 83%, exceeding previous highs by FY21E

b) Earlier estimate with 0.5-1.5GW/pa retirement



Source: CEA, Deutsche Bank estimates

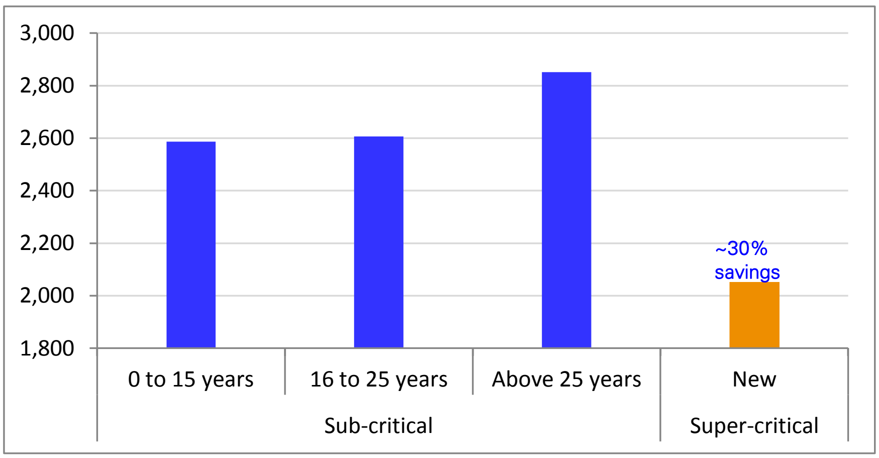
Why retire assets?

1) 25-30% higher pollution and coal usage

Our proprietary analysis suggest that these old (>25 year) projects are consuming 30% more coal than new plants to produce the same amount of energy, leading to higher pollution (due to inadequate burning); thus, a waste of natural resources like coal and high-cost power is being pushed on to financially challenged state utilities.

Heat-rate of old units are ~30% higher than new super-critical units – i.e., more coal usage and air pollution

Figure 16: Heat-rate of old units are ~30% higher than new super-critical units



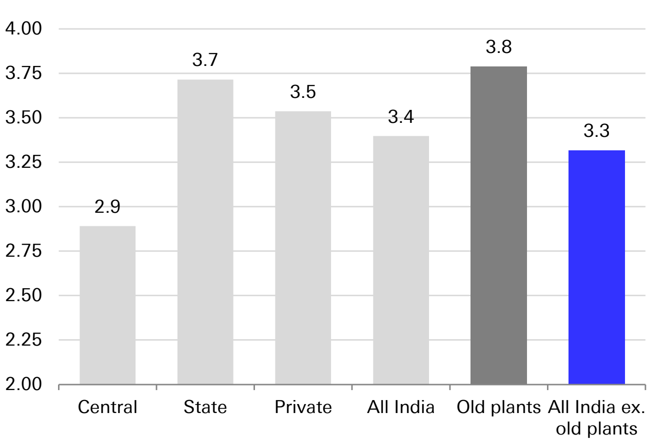
Source: Deutsche Bank, CEA data

2) 12% gain in tariffs State Utilities

12% tariff reduction to state utilities on shutting old projects

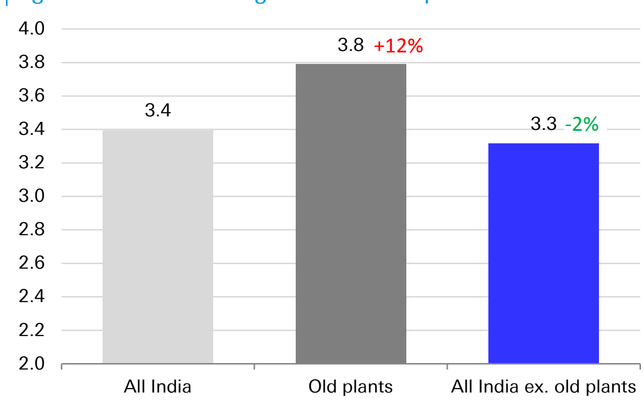
Retirement will lead to substantial savings for the financially stressed state utilities – as old plants have no interest/depreciation but have high O&M charges and variable cost. Closing inefficient plants will reduce the burden on states, and also reduce tariffs upon higher utilisation of more efficient super-critical assets – improving the load factors reduces average per unit tariffs.

Figure 17: Tariff for coal plants in India (INR/u) – FY14



Source: CEA, Deutsche Bank

Figure 18: Tariff saving of 12% if old plants are retired



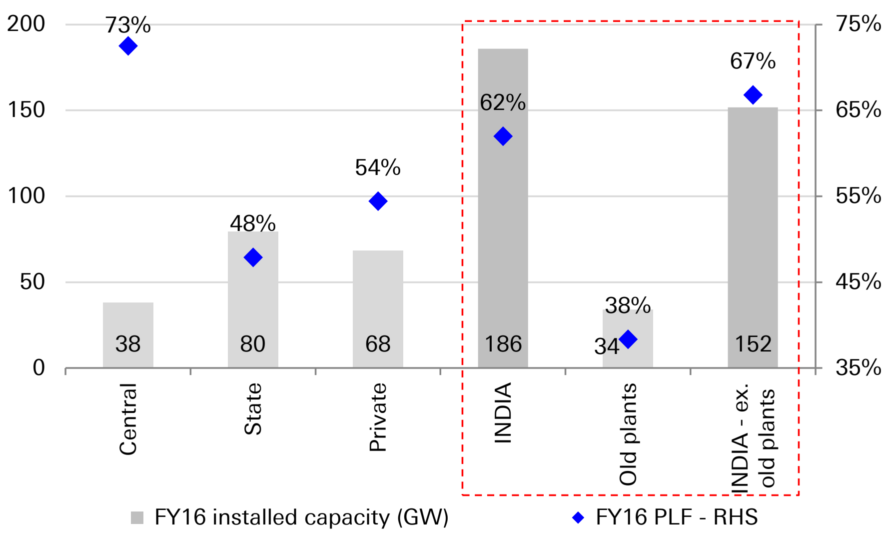
Source: CEA, Deutsche Bank

3) PLF - difference for old projects vs. new

Old assets account for 18% of the installed base, but generate just 12% of the overall generation in India for coal-fired projects. Our proprietary analysis suggests that these old (>25 year) projects are operating at ~40% utilisation (PLF) – at sub-optimal levels. As the cost of operations is higher, and variable cost is high, these projects do not feature in the merit order dispatch – and hence, utilisation is lower.

Old assets account for 18% of the installed base, but generate just 12% of the overall generation in India

Figure 19: Utilisation levels could improve if redundant assets are removed from the base capacity



Source: Deutsche Bank, CEA data

Enabling policies in place

The CEA (Central Electricity Authority), the Ministry of Power's technical arm, is planning a programme of the retirement of old assets. The possibility of replacing sub critical old & inefficient thermal units by supercritical units has been discussed, as per their minutes of meeting. This would enable effective utilisation of already-available scarce resources like land, water and coal. It further added that capacity of about 36 GW TPS is more than 25 years old and these units could be replaced in a phased manner.

MoC has issued guidelines for automatic transfer of coal linkage from old & inefficient units to new super-critical units

The CEA has highlighted that the replacement of old units by new supercritical units is being encouraged by the Government of India, and the Ministry of Coal has already issued guidelines for automatic transfer of coal linkage from old & inefficient units to new super-critical units. We believe the key criteria for retirements are not only age, but also economics of operations – the majority of projects are uneconomical and inefficient as per the above data.

While state utilities will likely be unwilling to part ways with old assets, the Central Government has put in an enabling environment to ensure faster transition.

First, stringent environmental norms have been introduced – applicable from December 2017. We believe that the new environmental norms to tighten PM, SOx and NOx emissions from the power projects will enforce the replacement cycle. We understand NTPC is already seeking exemption for projects commissioned earlier than 2003.

Second, coal fungibility has been introduced- viz., states and central utilities can switch coal between their various projects, despite losing allocation – and transfer coal to more efficient projects.

Third, the Ministry of Coal has already issued guidelines for automatic transfer of coal linkage from old & inefficient units to new supercritical units.

Figure 20: New emission norms are stringent for power projects

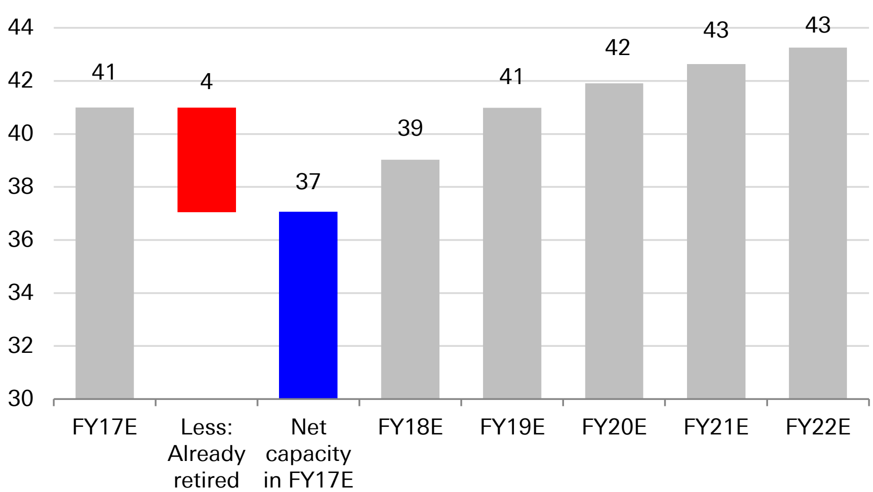
NEW	OLD
Particulate matter	**<=100 mg/m3**
i) <=100 mg/m3	
ii) <=50 mg/m3	
iii) <=30 mg/m3	
Sulphur dioxide (SO2)	**<=600 mg/m3**
i) <=600 mg/m3 (<500 MW); <=200mg/m3 (>=500 MW)	
ii) <=200 mg/m3 (>=500 MW)	
iii) <=100 mg/m3	
Oxides of Nitrogen (NOx)	**<=600 mg/m3**
i) <=600 mg/m3	
ii) <=300 mg/m3	
iii) <=100 mg/m3	

Source: Deutsche Bank, MOEF

Retirement potential is 36GW and counting…

Retirement potential is 36GW, reasonably large due to the bunch up of old assets and inertia historically to retire assets given the power shortages. That mindset seems to be changing with - a) enough power capacity; b) improving energy efficiency, i.e., lowering cost; c) global mandates like COP 21 to reduce pollution levels. 3.95GW assets have been retired in the past seven years by the CEA, which leaves ~36GW old assets still being operational. This count will increase to >41GW in the next two years, and the proportion will drop as states reduced investing into new power projects between late 90s and early 2000s.

Figure 21: Replacement time-cycle for India coal assets

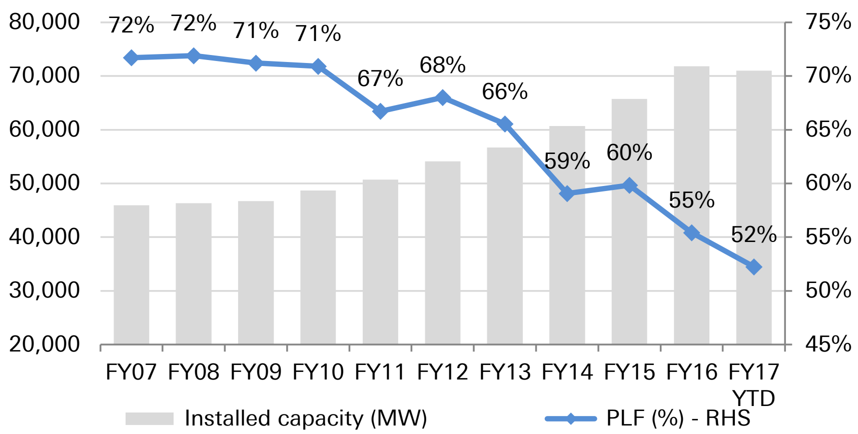


Source: Deutsche Bank, CEA data

States role as a generator is diminishing

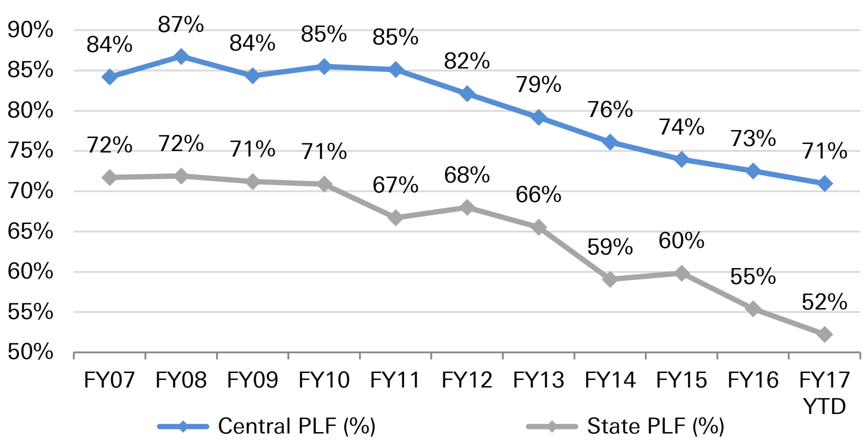
While states utilities have been anchor investors for power generation capacities historically and had reasonable utilisation, the advent of the private sector has led to state coal-fired project PLFs and share declining over the past 10 years.

Figure 22: State thermal capacity has been struggling, utilisation reducing with old assets



Source: CEA, Deutsche Bank

Figure 23: In last decade, states have lost 19% PLF pts vs. Centre at 13% pts



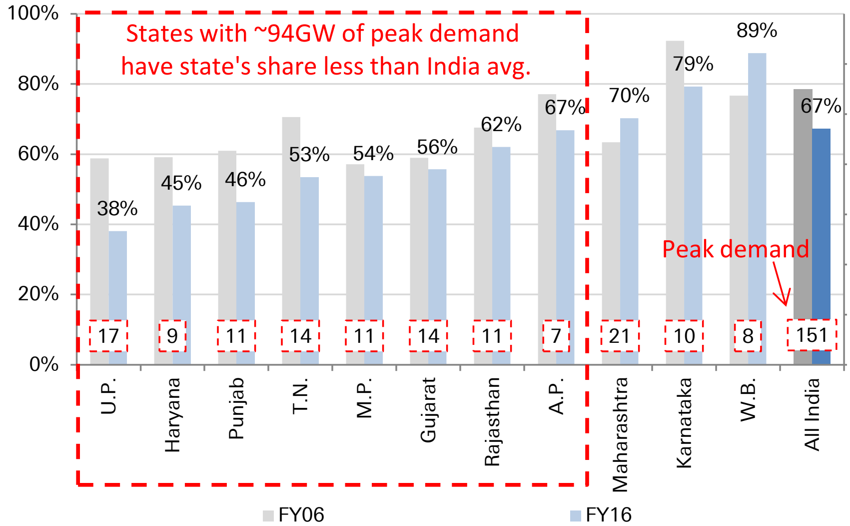
Source: CEA, Deutsche Bank

States utilities prefer reasonable share of supply from their own generation – which could start State PSU capex

State utilities have always preferred a fair share of generation from their own projects, and most of their private IPP power purchase agreements (PPA) have been under some kind of litigation. The lowest level of share in the state-owned capacity, given the large-scale retirement, could trigger fresh investments from states.

According to our assessment of long-term data trends, state utilities' share of their own generation in peak-load has declined for UP, Haryana, Punjab, TN, MP, Rajasthan and AP could initiate a capex programme for new generation projects.

Figure 24: Share of state generation to their peak demand has fallen – which might trigger capex to ensure energy security (State capacity/ Peak load)



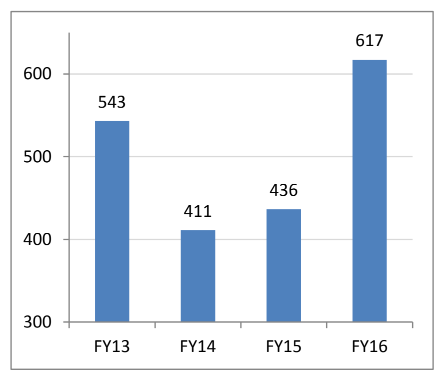
Source: CEA, Deutsche Bank

State gencos funding has increased

There have been concerns about the financing ability of state gencos for new projects given that: a) distribution companies are under stress, and state gencos will need to fund Uday debt takeover; b) a large part of capex will flow to meeting environmental norms and will crowd-out new projects' funding; and c) there are enough projects available to buy power from the private sector.

While these concerns are genuine and state gencos like Telangana have not provided further capex in 2016-17 in their state budget, we understand that the financial closure has been tied-up with PFC/REC, which have committed INR500bn for state capex.

Figure 25: PFC increased state sector financing for Gencos (INR bn)



Source: Deutsche Bank, PFC

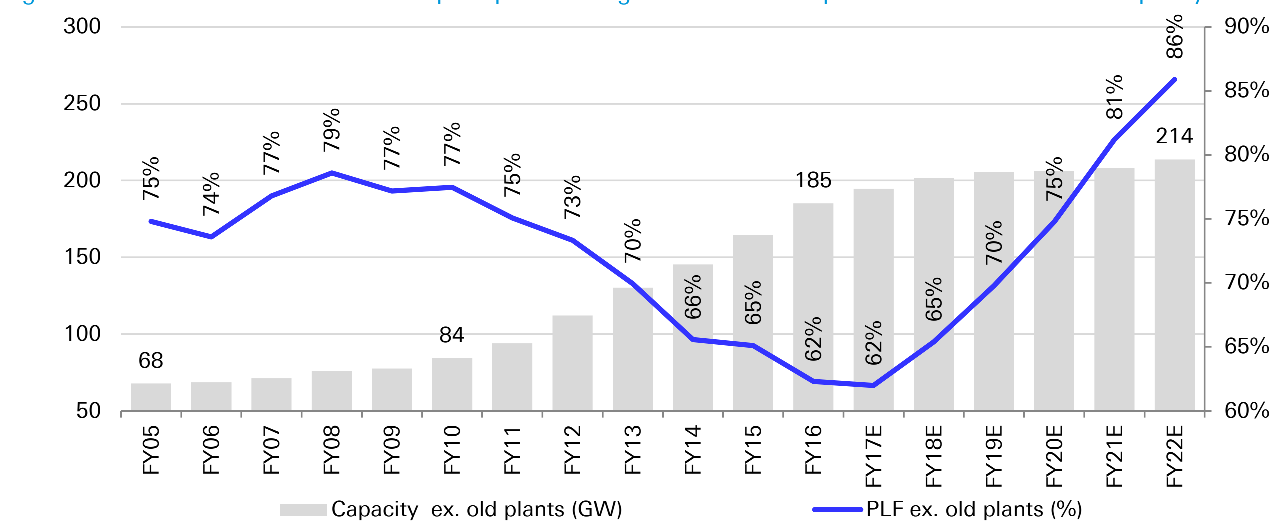
Why is replacement required for retired assets?

Mr Goyal informed the lower house of Parliament that the Ministry of Power has stopped the repair and maintenance of old thermal power plants and is concentrating on building super-critical power plants in the future. - Sep'2015

Coal PLFs could turn to reach peak utilisation by FY20-21

We estimate that Indian PLFs could exceed the 2008 peak of 78% by FY20-21, a year earlier than our previous estimate, and touch 86% by FY22, vs. our earlier estimate of 77%. At that level, it could lead to serious power shortages.

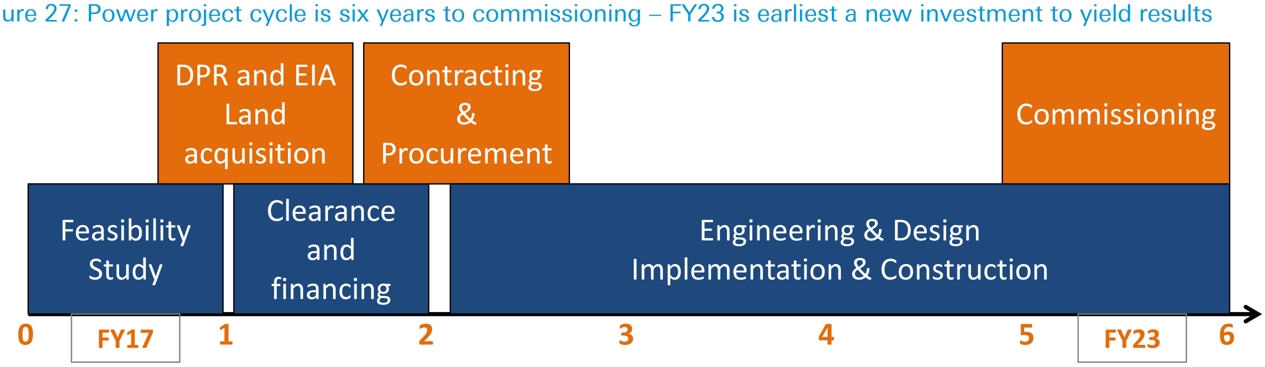
Figure 26: All India coal PLFs could surpass previous highs earlier than expected based on retirement policy



Source: CEA, Deutsche Bank

New asset takes at least six years to start generation

Figure 27: Power project cycle is six years to commissioning – FY23 is earliest a new investment to yield results



Source: Deutsche Bank estimates

Pressing need to add further capacity additions now

Our analysis suggests India will need ~19GW coal-fired power plants, conservatively

We believe the new capacity additions need to be planned now, in order to be an early beneficiary of the uptick in power sector utilisation rates, and in turn, the recovery in the spot power markets. Our analysis below suggests that for just 7% demand growth in 2020 – India will need ~19GW coal power plants, conservatively assuming a 500bps reduction in AT&C loss (to 19%) and 10GW/pa solar/ renewable capacity additions. But with our base case 8% demand growth, 22GW/pa capacity addition will be required.

Figure 28: India will need c.20GW/pa coal capacity addition to meet just 7% demand growth, considering 19% AT&C loss and 10GW solar/RE

	Units	Conservative	Base-Case	Comments
Peak Demand- FY16	GW	155	155	
Peak Demand- FY20 e	GW	200	200	
Power demand growth	%	7	8	
Incremental demand	GW	14	16	
AT&C Loss - FY20	%	19%	20%	24% as of Mar'15
Availability	%	90%	90%	
Auxiliary Consumption	%	7%	7%	
Gross Capacity required	**GW**	**21**	**24**	**per annum**
Solar/RE annual addition	GW	10	8	
Utilisation	%	20	20	
Net Availability	GW	2	1.6	
Gross coal capacities required	**GW**	**19**	**22**	**per annum**

Source: Deutsche Bank estimates

Government estimate also shows 18-24 GW/pa build-out required

While the Ministry of Power and the CEA have yet to release the National Electricity Plan 2017-2032, we take the data from the future transmission planning report till 2032 released in June 2016. It says that 18.6GW per annum capacity addition will be required for coal-based power projects between FY2022 and FY2027, implying these should begin ordering now.

Figure 29: Generation Capacity for Year 2026-27 (or planning for the 14th Five-Year Plan – FY2022-2027)

MW						Incremental			
Regions	Thermal	Hydro	Nuclear	RES	Total		Thermal	Hydro	Nuclear
Northern	66,956	27,348	5,920	66,995	167,218				
Western	150,694	9,322	6,380	77,755	244,151				
Southern	87,348	11,747	6,820	84,964	190,878				
Eastern	81,915	8,084	0	18,162	108,161				
North Eastern	2,398	10,658	0	2,620	15,675				
ALL INDIA	**389,311**	**67,159**	**19,120**	**250,496**	**726,083**	**5- years**	**93,101**	**4,501**	**4,800**
						per year	**18,620**	**900**	**960**

Source: Deutsche Bank, CEA data

Figure 31: Coal-fired power projects ordering potential as per CEA

GW	Coal - Incremental capacity addition in 5-years	Annual potential	Comments
Mar'16			
Expected between Mar17- 22	85	14	Ordering almost done
Expected between Mar'22-27	119	24	Ordering to begin

Source: Deutsche Bank, CEA data

Figure 30: Plan-wise capacity addition requirement

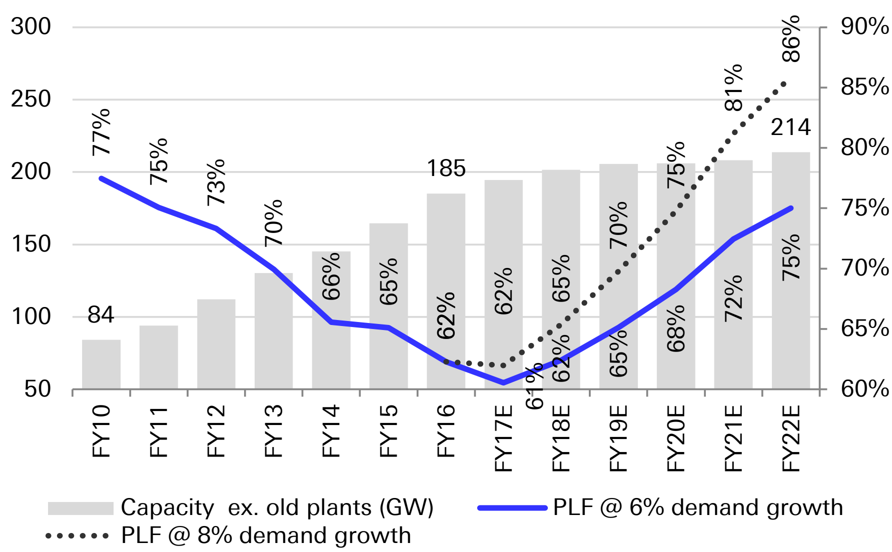
5-Year Plan ending	Capacity Addition (GW)	Annual Potential (GW/pa)
2021-22	114	23
2026-27	98	20
2031-32	171	34
2035-36	219	44

Source: Deutsche Bank, CEA data

Would India plan for 8% growth or 6% growth – we think the former

Bears would argue that the demand growth has been just 6.3% on average over the last five years (due to weak economic growth), and hence, new capacity may not be needed – refer to the figure below. However, we believe the government will plan future capacity addition at 8% power growth assumption – aiming at higher GDP growth of 8-10% and to fulfil promises made under programmes such as '***Make in India***' and '***100% household electrification***'.

Figure 32: However, if demand remains weak at ~6% as in the past four years, the previous peaks may not be scaled before FY22e



Source: Deutsche Bank, CEA data

Replacement will accelerate PSU capex

11GW of old state projects could be replaced by 30-40GW new supercritical projects

The CEA met with respective state utilities and short-listed 11GW projects to be replaced in the near term. This could lead to 30-40GW new business potential for equipment suppliers, given that old 110-220 unit rated sets will be replaced with 660-800MW unit rated super-critical sets.

Figure 33: Replacement potential for initial set of State projects

Utility	State	Capacity (MW)	Remarks
Kota TPS	Rajasthan	220	RRVUNL to take necessary measures for heat rate improvement of the units.
Ukai TPS	Gujarat	610	Need-based R&M works need to be expedited.
Koba west TPS	Chattisgarh	840	Heat rate improvement needs to be done.
Nasik TPP	Maharashtra	630	Action for heat rate improvement needs to be taken.
Koradi TPS	Maharashtra	210	To be retired once expansion units are in place
Khaparkheda TPP	Maharashtra	1,340	R&M works for performance improvement to be expedited.
Chandrapur	Maharashtra	2,840	Decision on retirement of the units shall be taken, based on experience of Koradi
Raichur TPS	Karnataka	420	Ongoing R&M works to be expedited.
Barauni	Bihar	210	Ongoing R&M works to be expedited.
Ropar TPP	Punjab	840	Can be considered as a potential site for replacement by new supercritical units.
Ukai TPS	Gujarat	240	Replacement of the units by Supercritical units.
Satpura / Amarkantak TPS	MP	830+240	Recommended for retirement. MPPGCL to furnish details for land and water.
Panipat TPS	Haryana	440	TOR obtained for 800MW expansion unit
Durgapur	West Bengal	340	Replacement units – Action to be initiated.
Chandrapura	Jharkhand	890	Replacement units – Action to be initiated.
Total capacity		**11,140**	
Total business potential		**30-40GW**	**On replacement with a higher sized super-critical unit**

Source: Deutsche Bank

Our study prefers replacement to address pollution norms

Our study points to 14% cost advantage for replacement than to invest for pollution norms in an old project

Our study points to 14% advantage in cost-benefit analysis for replacement over further INR8-10mn/MW investment for pollution control capex in a >15 year old project. The cost savings will kick in from the 5th year, and with further extended benefit of additional 15 years. The net levelised costs are also lower for a new plant.

Figure 34: Cost benefit analysis favours replacement vs. further investments in an old project

Parameter	Unit	15 year old plant	New Plant
Project Unit	MW	220	660
Capital cost/MW	INR mn/MW	30	70
Capital Investment	INR mn	6,600	46,200
PLF	%	65%	80%
Heat Rate	KCal/kWh	2,800	2,100
GCV of Coal	KCal/kg	3,500	3,500
Specific fuel consumption	kg/Kwh	0.8	0.6
Price of Coal	INR/t	2,000	2,000
O&M	INR/u	0.44	0.26
Interest	INR/u	-	0.63
Depreciation	INR/u	0.13	0.53
Variable Cost	INR/u	1.60	1.20
Cost of Power	INR/u	2.17	2.61
Cost of FGD+EPC+NOx	INR mn	2,200	Included above
Additional Fixed cost	INR/u	0.41	-
Gross Cost	INR/u	2.58	2.61
Levelised Cost	**INR/u**	**3.00**	**2.81**
Life remaining	Years	10	25
Incremental IRR	**%**	**-**	**14%**

Source: Deutsche Bank estimates and assumptions

Risks to the replacement theme

Lower than expected replacements

Based on limited new capacity on our forecast, the PLF of 86% in FY22 is very high and could lead to serious shortages - there is a risk of slowing down old units retirement. Also, such delay is likely given some of the funding constraints with states. It can artificially keep PLF depressed (similar to current case) but low-cost projects/ companies will still see raised utilisation rates.

Solar will turn big once the storage costs decline

Solar can at best replace the gap between base-load and the peak-load as of now (20-25GW), due to time-specific generation. Additionally, storage / back-ups are expensive. However, experts believe solar can replace conventional generation and adoption could hit the 'S' curve with tipping points when storage costs decline to marginal costs – making every consumption point a source of generation, i.e., enabling the viability of roof-top solar. However, for a price sensitive market like India and wherein residential tariffs are significantly cheaper than global average, our base case is that coal is likely to remain a core power source in India at least for the next decade.

Coal fired-power plants have been at the receiving end

Coal projects are bearing the burden of subsidies to fund renewables

The Indian government has made a large commitment towards renewable energy and in that regard has been increasing the burden of subsidies on coal projects to fund growth in the renewable energy sector.

- Indian Railways' decision to levy coal terminal surcharge at both loading and unloading ends for power companies located beyond 100 km of coal mines – INR55/t each.
- Doubling of environmental cess to INR400/t in FY17.
- Coal price increase by ~15% for grades used G10 to G13 in the power sector.
- New environmental norms applicable from December 2017 for all projects will potentially increase the cost of coal-fired power by 7-8%.
- Indirect cost of transmission burden- free for renewable energy as of now.
- Must-run status and priority in merit-order dispatch for the renewable sector.

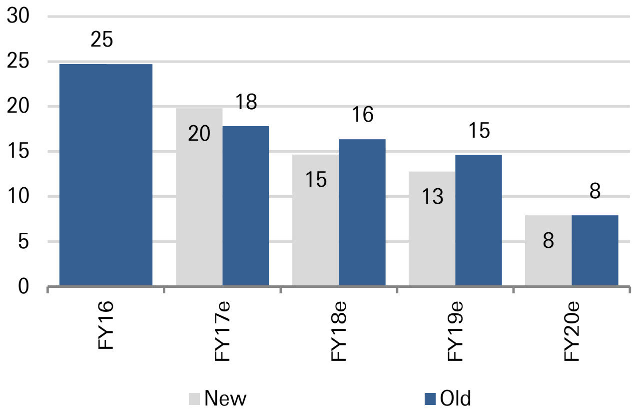
However, the biggest benefit for coal projects is…

Benefit for coal projects is cheaper variable cost, reliability of supply as well as deemed generation benefit

The biggest benefit for coal projects is cheaper variable cost, reliability of supply as well as deemed generation benefit (fixed charge recovery even when the project is backed down due to lack of demand). This anomaly might get corrected in future for renewable projects – and they may also look to get deemed generation benefit.

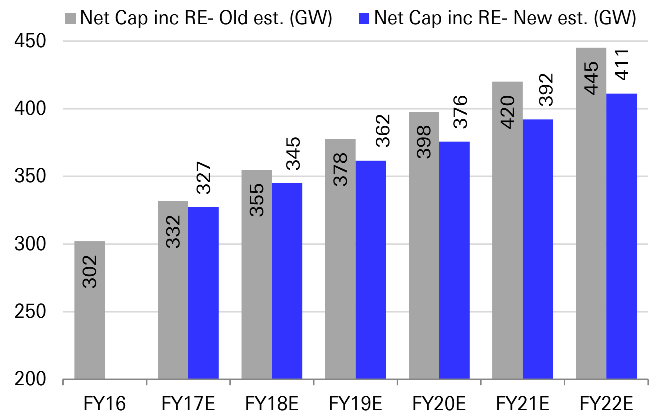
New capacity forecasts

Figure 35: Capacity addition have been delayed



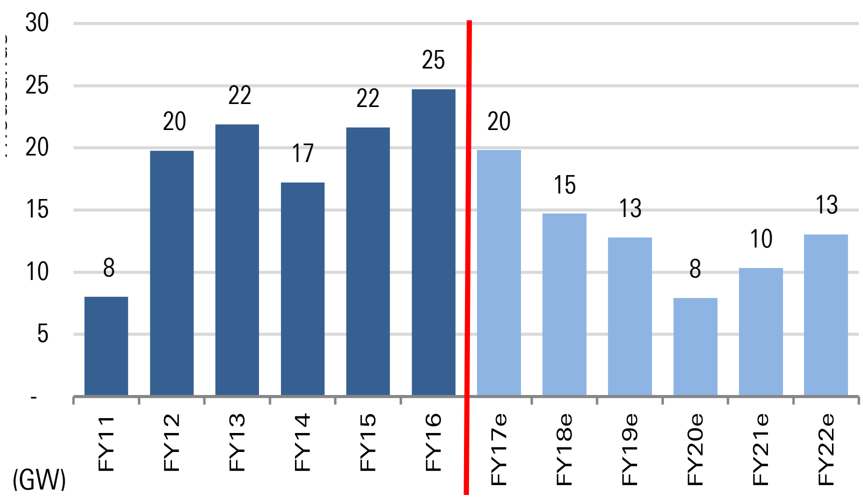
Source: Deutsche Bank

Figure 36: India new capacity forecasts inc Renewables including retirements



Source: Deutsche Bank

Figure 37: Capacity addition to peak in FY17e and then fall



Source: CEA, Company data, Deutsche Bank

Figure 38: Power generation capacity overview

Capacity	Units	FY13	FY14	FY15	FY16	FY17E	FY18E	FY19E	FY20E	FY21E	FY22E
Capacity (GW)		-				-					-
- Coal	GW	130	145	165	185	195	202	206	206	208	214
- Hydro	GW	39	41	41	43	45	46	48	48	49	51
- Other Conventional	GW	26	28	30	31	34	34	34	36	36	36
Total	**GW**	**196**	**214**	**236**	**259**	**273**	**282**	**288**	**290**	**294**	**301**
% increase		12%	9%	10%	10%	5%	3%	2%	1%	1%	2%
Gross addition	GW	21	18	23	24	20	15	12	8	10	13
Retirement	GW	-1	-1	0	-1	-6	-6	-6	-6	-6	-6
Renewable Energy	**GW**	**28**	**32**	**36**	**43**	**54**	**63**	**74**	**86**	**98**	**110**
Total Power Capacity	**GW**	**223**	**245**	**272**	**302**	**327**	**345**	**362**	**376**	**392**	**411**

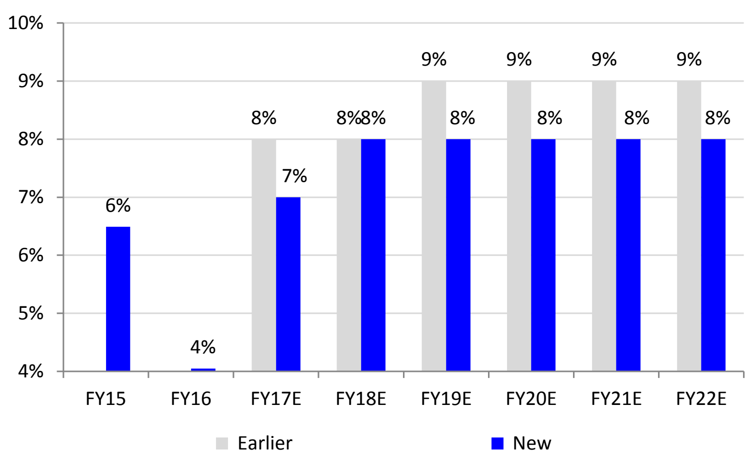
Source: CEA, Deutsche Bank

Demand – taking a more balanced view from energy-saving initiatives

Demand side management is finally taking off

Apart from supply side reforms, the Central Government has kick-started demand-side management, and has been reasonably successful this time. Energy efficiency drive like LED lighting and adoption of efficient ACs and pumps could reduce demand, and flatten out the load-curves. We now assume a lower demand forecast by 1% per annum – thereby reducing requirement by ~11GW by FY22E. We think 8% is a reasonable growth estimate as we believe that the government is aiming a higher GDP growth rate of 8-10% (typically 0.8-1.0x GDP multiplier) and to fulfil promises made under programmes such as 'Make in India', '100% electrification' and 24x7 power supply by 2019.

Figure 40: We lower demand growth, due to faster adoption of energy-saving devices – lighting, ACs and pumps – thereby saving ~11GW by FY22E



Source: Deutsche Bank estimates, CEA data

DELP could lead to 20GW peak load savings

The lighting sector accounts for about 20% of the total electricity consumption in India. It has been estimated that the use of LEDs in domestic and public lighting could result in 50-90% reductions in energy consumption. Under the National Street Lighting Programme, 35m conventional street lights are to be replaced with energy efficient LED street lights. The national DELP (Domestic Efficient Lighting Programme) also envisions the replacement of 770m incandescent bulbs with energy-efficient LED bulbs.

Survey results were further extrapolated to the entire national programme (replacement of 770m domestic lights). At the national level, 102.9 BUs would be saved annually, resulting in a reduction of 20GW peak load.

Figure 39: DELP envisaged savings by 2021-22

Region	Units saved (mn kWh)	Peak Load reduction (MW)
Puducherry	81	16
Anantapur	150	29
Guntur	249	49
Srikakulam	142	28
W. Godavari	214	42
Total (for five cities)	**836**	**164**
National Level (for 770mn LED bulb distribution)	**102,901**	**20,122**
% of India by 2020e	**6.8%**	**10%**
Achieved till Oct'16 – 22%	21,937	4,394
% achievement	20%	20%

Source: Deutsche Bank, MOP

Could Uday take-off the power demand to 8% and above?

We believe that the Uday distribution reforms have the potential to reduce losses of state utilities by almost 80-85%. This could be achieved by – (1) interest rate reductions – INR0.39/kWh gap; and (2) coal import substitution and quality improvement drive – partially offset by coal price and freight increases as well as increase in environmental cess – INR0.11/kWh gap reduction.

Mr Goyal expects all state utilities to come on board for the UDAY distribution reforms by the end of November 2016, and complete the process of issuing bonds by March 2017. The Minister expresses confidence that 100% Rural Electrification, including villages in LWE Districts and dense forests, will be achieved by 1 May 2017, one year ahead of schedule. Further, the Minister has informed that the Rural Electrification Corporation (REC) is in the process of drawing up a scheme for extending long-term soft loans to the States at a flat rate to achieve 100% household electrification across the States for both above and below poverty line populations in rural areas.

Mr Goyal notes that all the States have now come on the URJA map after which consumers will receive real time information in advance through sms about every power outage in their area, whether planned or non-planned.

Figure 41: SEB losses could reduce by 2/3 just by interest and coal cost reduction, ceteris paribus

INR bn	Parameters	Comments
Profits / (Losses) - subsidy booked	(562)	
Reductions/ Savings from Uday -		
Interest – a	(264)	INR2.2tn debt moved to States
Interest – b	(32)	INR800bn debt cost reduction by 400bps to 8.5%
Sub-total	**(296)**	
- per unit	**(0.39)**	
Coal import reduction	(280)	50% reduction in import to c.45mnt, and import coal cost reduction from USD100/t to USD75/t
Coal price increase	+58	14% increase or ~INR120/t for domestic coal for 480mnt
Env Cess	+96	Increase in environment cess by INR200/t
Freight increase	+83	Assumed INR150/t impact
Coal quality improvement	(38)	10% GCV improved
Sub-total	**(82)**	
- per unit	**(0.11)**	
Total Savings	**(378)**	
- per unit	**(0.50)**	
India per unit gap in FY15	**(0.58)**	**Subsidy booked basis**

Source: Deutsche Bank estimates, PFC data

COP21 – 40% renewables by 2030, still needs 19GW coal

India ratified the Paris global climate agreement COP21 in October 2016, and committed to keep the global temperate increase "well below" 2 ^{O}C and pursue efforts to limit it to 1.5 ^{O}C. India accounts for about 4.5% of global greenhouse gas emissions. As a part of the national plan, India has set a goal of producing 40% of its electricity with non-fossil (renewables) fuel sources by 2030.

Figure 42: Coal-fired capacity requirement @ 19 GW/pa for COP21 targets

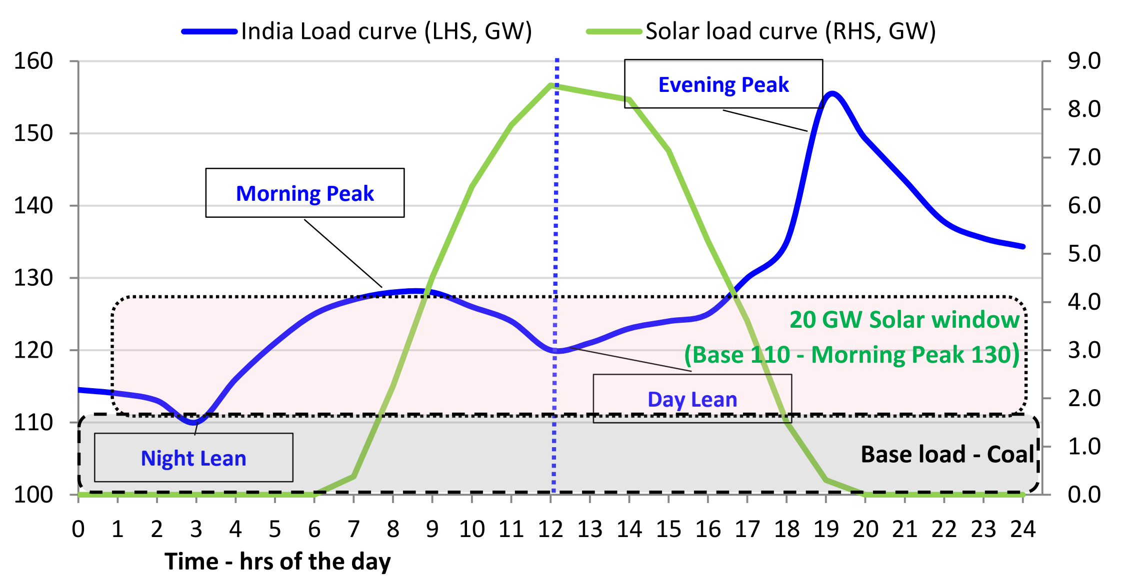
Parameter	Unit	Value
Peak Demand- FY16	GW	155
Peak Demand- FY30 @ 8% demand growth	GW	455
Non-renewable as per COP21 targets	%	60%
Coal-fired demand	GW	273
AT&C Loss - FY30	%	15%
Availability - 90%; Auxiliary Consumption - 7%		
Gross Capacity required	**GW**	**384**
FY16 capacity	GW	185
Old assets to be retired by 2030	GW	68
Net operating capacity by 2030	GW	117
Incremental capacity required	**GW**	**267**
- per annum capacity required to be added from FY16-30	**GW**	**19**

Source: Deutsche Bank estimates

Solar can, at best, meet the morning peak-load

Renewable energy can only be fed into a grid that has a stable base load – from coal-based power projects. The penetration level can increase only if flexibility in base load is developed (fast shut-down start-up like for gas), or cheaper gas power or cheaper storage solutions can replace coal from base load, and deepen solar penetration.

Figure 43: Solar can meet the morning peak, but not the evening peak



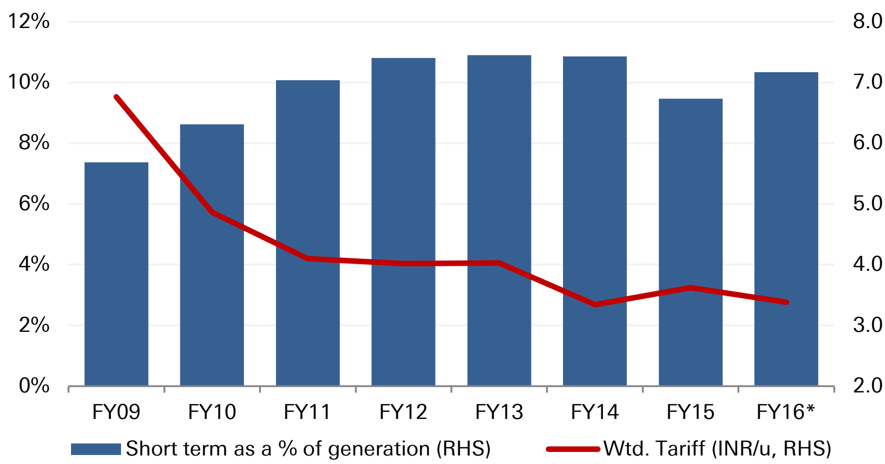
Source: Deutsche Bank estimates, CEA data (2016 data on load-curve)

Spot power tariffs remain weak

Spot tariffs are unlikely to go up sharply in the next 1-2 years, despite higher utilisation for IPPs

Spot power tariffs remain weak as supply side reforms on domestic coal and transmission have increased supply, but demand is still weak with industry and discoms not adequately funded (working capital being restrained by banks post-Uday). While the rest of India tariffs have been flat at ~INR2.3-2.8/kWh, tariffs in South India have collapsed 65% yoy to INR2.45/kWh on average between May 2016 and Oct'16 – with a minor uptick (Figure 46). Spot tariffs are unlikely to go up sharply in the next 1-2 years, as 10-12GW IPP projects are supplying in the short-term market, which do not have a PPA; and solar additions / demand-side management efforts are reducing peak shortages.

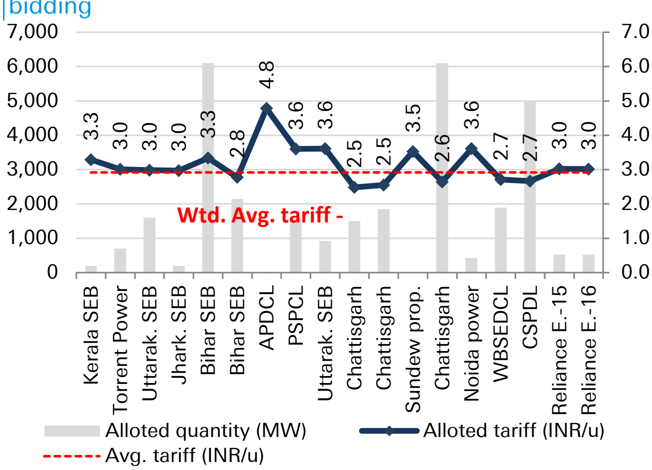
Figure 44: Short-term tariffs and market volumes remain low



Source: CERC, Deutsche Bank

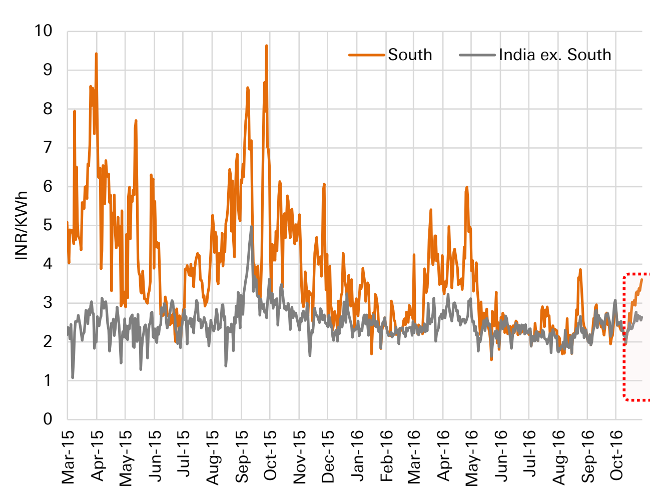
Short-term (<one-year) power procurement has also seen a correction in prices by 15-25% since launching the e-bidding platform. The price of term contracts has settled just 15-20% above the spot (day-ahead) power tariffs (Figure 45).

Figure 45: Power procurement price through DEEP's e-bidding



Source: MSTC (DEEP portal), Deutsche Bank

Figure 46: Spot power price on IEX – daily data



Source: IEX, Deutsche Bank

Utilisation recovery, followed by capex recovery

(1) Utilities – Capacity utilisation recovery to have dual impact on earnings and valuations

Given the higher retirement of assets (or their redundancy), lower supply addition over the next five years and likely demand recovery with economic activity/Uday reforms – we believe that capacity utilisation rates are likely to recover for the thermal power projects. As a second phase, new capex will have to begin over the next 12-24 months, if future shortages are to be avoided.

As in a usual recovery, asset prices see a re-rating with an increase in utilisation levels. The ingredients were put in place last year, viz. 1) lower coal prices/better availability/ improved quality; 2) reduced interest cost; and 3) increased transmission connectivity and Uday distribution reforms.

Impact on earnings and target prices

While we find high sensitivity to volume growth for JSW, Adani and Reliance Power, they are challenged by higher imported coal prices. We have considered improvement in PLF for our earnings model. However, if there is a stronger-than-expected resurgence in volumes, and power demand grows >8%, there could be upside and we have captured those sensitivities in Figure 47.

Figure 47: Impact of rising PLF on target prices – higher earnings and ROEs

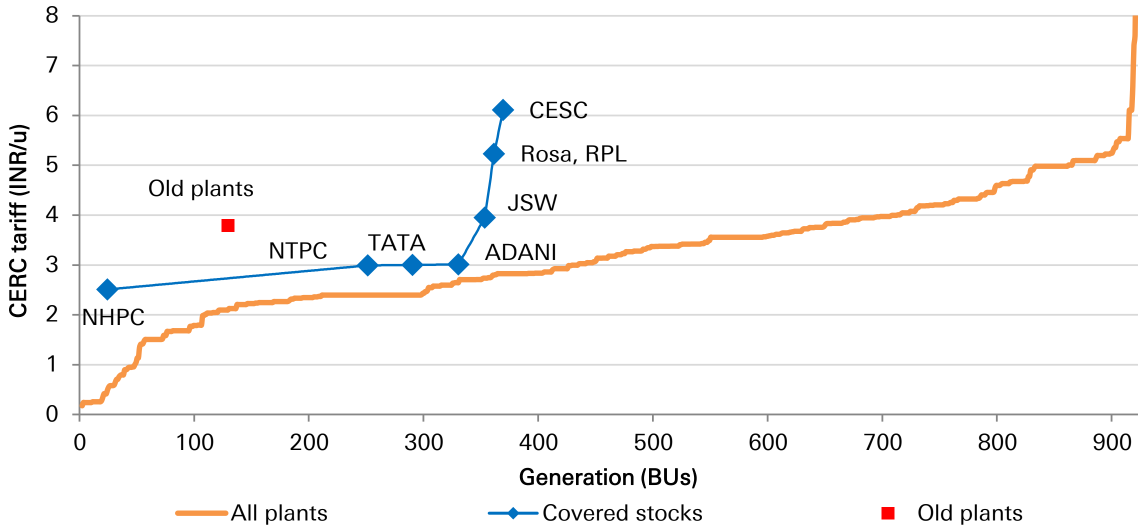
Companies	Target Price	Capacity – FY16	PLF (%)				FY18e on +2% PLF			FY18e on +5% PLF		
	(INR/sh)	(MW)	FY16	FY17E	FY18E	FY19E	TP (%)	EPS (%)	ROE (bps)	TP (%)	EPS (%)	ROE (bps)
NTPC	200	46	78%	78%	80%	82%	2%	2%	20bps	4%	4%	49bps
NHPC	30	6.5	45%	46%	46%	44%	2%	2%	14bps	4%	4%	33bps
Adani Power	27	10.4	74%	78%	81%	80%	12%	-83%	297bps	29%	-221%	748bps
JSW Energy	70	4.5	61%	68%	70%	72%	4%	5%	46bps	10%	13%	115bps
Tata Power	90	8.1	73%	76%	77%	80%	1%	0%	0bps	2%	0%	0bps
Reliance Power	45	5.9	82%	87%	90%	90%	8%	7%	45bps	19%	17%	111bps
CESC	810	2.3	61%	59%	66%	68%	-3%	8%	73bps	-2%	10%	85bps

Source: Deutsche Bank

Which companies will benefit in the real world

While the generic utilisation theme will be good for the entire sector, we believe the companies with a better cost curve will be the ones to benefit disproportionately. The government is astutely focused on cost reduction and hence, the pricing out of high-cost IPPs could be a concern. Despite low variability to earnings on PLF, we consider NTPC a better play with a combination of capacity additions and increasing utilisation trend – leading to earnings growth and a re-rating potential.

Figure 48: Cost curve analysis favours NTPC's growth when old units are shut



Source: Deutsche Bank, CEA data (2014 data on load-curve)

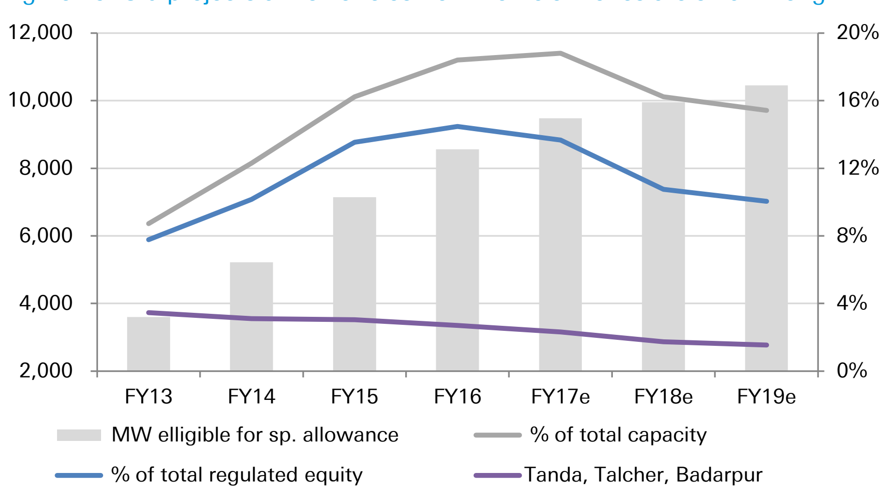
NTPC – all ingredients in place for earnings pick-up & re-rating

Key risk is Government drive to shut old projects

NTPC's 8GW projects have exceeded 25 years useful life. They earn higher returns due to a special allowance. While capacity looks big (16% of total), it would form just 11% of regulated equity base. We believe that only three projects of 1.6GW (Tanda, Talcher and Badarpur) out of these 8GW, representing just 2% of the total regulated equity, are operating below par, i.e., at >2,400 KCal/kWh heat rate – and we consider their closure by FY18-19E in our model. If there is a general mandate to close all projects without considering their performance, the entire 8GW could be closed and pose risk.

We assume three projects of 1.6GW capacity to shut over the next three years

Figure 49: Old projects at risk of closure – inefficient ones are small though



Source: Company data, Deutsche Bank, CERC, CEA

NTPC - Investment thesis

- 75% addition to regulated equity over FY16-19 will drive strong EPS growth and RoE expansion. PBT Growth – 22% CAGR over FY16-19E.
- The company is reducing its costs and gaining market share in a weak market and is better prepared when the market picks up. The upside to flow: 1) higher power demand due to lower coal costs (and coal import substitution); and 2) Uday distribution reforms to improve SEB health – addressing demand issues as well as counterparty risks.
- NTPC's new CEO has proactively reached out to its key stakeholders and resolved long-pending issues:
  - A) With the regulators – regulations are now balanced vs. unfavourable for power generators earlier in 2014-19 tariff norms. (a) Sale of excess power allowed – provides upside opportunities. (b) Compensation for operational parameters, if utilisation is lower due to the fault of State utilities – protects downside risks.
  - B) With Coal India – the agreement to supply higher domestic coal and eliminate costlier imports is a positive – leading to a significant 25% cut in fuel cost to INR1.55/kWh in just two quarters.
- NTPC seems to have improved its heat rate, as implied by the 5.4% lower coal consumption in FY16 to 0.74kg/kWh – a big saving in a year. This has led to higher incentives and core ROE registering c.19.3% for FY16.
- Tax 80IA benefits expiring by March 2017 – therefore expect strong asset commissioning to avail tax benefits in 2H FY17.

Valuations

- Valuations look reasonable at 1.2x FY18E P/B when interest rates are declining, for 16/23% PAT/EBITDA CAGR for FY16-19E and expanding ROE (c.300bps) to c14.4%. We value NTPC on DCF and exit P/B, assuming 12.5% COE and 3% terminal growth. We value the core equity at an exit P/B of 1.65x FY18E.

Risks

- Key risks are earnings downsides from coal quality-related issues/regulatory orders, old plant shutdown on environmental norms, and/or larger capital allocations for unrelated diversification like fertilizer especially at lower returns.

Reliance Power – Upgrading to Hold on underperformance

RPL - Investment thesis

- We are upgrading Reliance Power to Hold – as the stock has underperformed and price/valuations look reasonable. We raise target price by 7% to INR45/share on roll-forward to FY18E.
- RPL's recent strategic decisions could enhance shareholder value:
  - RPL exited from potential loss-making projects. Tilaiya UMPP and Krishnapatnam UMPP could also fetch some cost recovery on return of projects.
  - The Chitrangi project seems unlikely to be pursued with no coal availability post cancellation of mine;
- Interest expense for Sasan, which is just ~8%, is very competitive due to Buyers' credit and ECB and, hence, makes positive returns likely.
- Its Rosa and Butibori projects have operated better than the industry's average, thereby yielding >20% ROE.
- ROE is depressed due to the Samalkot gas project not being operational - with similar equity as Sasan. Samalkot investment is at INR92.5bn, which is stranded due to gas unavailability; management expects to finalise a deal with Bangladesh in 3-4 months, and project to operate in ~2 years.
- We find valuations to be fair at 0.6x FY18E P/B and 7.7x PE for 6-7% average ROE.

Valuations

- We use a SOTP methodology to value RPL's 8.5GW of power generation projects and its coal assets, using 13% cost of equity for its power and coal assets.

Risks

- Key upside risks are: 1) higher-than-expected compensatory tariffs in Sasan and additional comp for INR depreciation; and 2) cheaper gas availability making Samalkot investments viable.
- Key downside risks are: 1) low utilisation rates; 2) curtailment of returns at Rosa and Butibori; and 3) inability to finance Sasan buyers credit and ECB at lower interest rates.

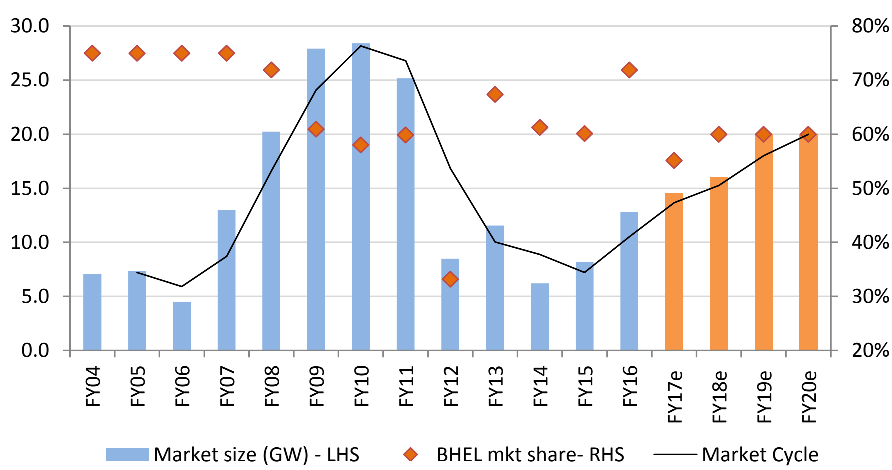
(2) **Industrials** – Urgent need for replacement with rising PLFs – beckon the new capex and capacity additions cycle

5-year boom-bust cycle points to a recovery

With the recovering capacity utilisation theme for utilities, we believe that the typical Stage II recovery benefits Industrials – with the new capacity additions cycle and a capex recovery in the India Power sector. Capex recovery is initiated by PSUs and followed-up by the private sector capex in 1-2 years.

Historical long-term market data shows that the 4-5 year down-cycle could come to an end, and lead to far stronger recovery by FY18-19e. The deficit pipeline due to relatively lower ordering in the past five years will itself create a large scope for new projects ordering, in our view, or the sector could see serious power shortages coming back in FY20-22e.

Figure 50: The 5-year cycle points to recovery in equipment ordering activity



Source: Deutsche Bank, BHEL, market data

BHEL – Turning 'around' the corner; reiterate non-consensus Buy

The redundancy of c.20% coal-fired capacity, reduced backlog of orders, and economic/ power demand recovery could lead to faster-than-expected revival for power projects' investments; hence, we raise medium-term growth to 15%.

Figure 51: BHEL – Blue-sky scenario points to 80%+ upside

	Unit	Base-case		Blue-Sky		% var
		FY18E	FY19E	FY18E	FY19E	FY18E
Order Inflows	INR bn	509	583	592	678	16%
Revenues	INR bn	345	409	361	444	5%
EBITDA	INR bn	22	47	35	68	57%
EBITDA margin	%	6%	11%	10%	15%	
EPS	INR/sh	6.5	13.9	10.8	20.9	67%
ROE	%	5%	9%	8%	14%	3 pps
Cash/sh	INR/sh	61	90	85	124	39%
TP - DCF	INR/sh	200		221	253	10%

Source: Deutsche Bank

BHEL - Investment thesis

We maintain our non-consensus Buy on BHEL because:

- Orders momentum has picked up from 3-5GW annually over the past three years to 10-12GW, and is likely to move back to 14-16GW annually. Replacement of old projects could rekindle capex recovery and business potential.
- BHEL has raised market share to 70-80% of PSU-led capex (from 40-50%).
- With power sector reforms, some stalled projects like GVK, Rattan Power, etc have started to move, which could not only improve execution rates, but also reduce working capital stress (receivables ~500 days in FY16, likely to reduce to usual levels of 200-250 days).
- Realisations have improved 20% in recent bids, while the raw material cost is down 18-28% over the past two years; this could lead to gross margin expansion.
- Operating leverage benefits are likely: a) gross margin expansion from better pricing and indigenisation of super-critical technology; b) employee redundancy: 5-6% natural attrition per annum in 2-3 years; and c) reversal of earlier provisioning from 9% to ~3% of sales.
- While PE and EV/EBITDA valuation appears high in a down-cycle, MCap is at a historic high discount to NAV and at just c.80% of receivables – makes risk-reward favourable.

Valuations

- We use a three-stage DCF model, assuming explicit forecast for FY16-19E of 13%, medium-term volume growth of 10% over FY20-25E and terminal growth phase of 3%, lower than other Industrial stocks of 5%. We have used WACC of 15%, assuming 100% of equity (RFR – 7%, RP – 7.1% and beta – 1.15)

Risks

- A slower-than-expected demand recovery and higher competitive intensity remain the key downside risks. Other key risks are further write-down of receivables/ order book, lower order finalisation, land acquisition/ environmental clearance delays, higher-than-expected increase in Pay Commission and threat of solar for thermal capex.
- Our sensitivity suggests that a 10% change in order inflows could result in a ~20% impact on EPS estimates for FY17E. While a 100bps change in RM/Sales could lead to a 21% impact on EPS for FY17E.

Thermax – early signs; but private industry segment weak

Thermax could also be a beneficiary of uptick in the power capex. However, the benefits are likely to be limited for Thermax, given that: (1) market structure has changed – power capex is largely driven by PSUs, which have a higher payment period; (2) projects offered are 70-80% EPC, vs. 20-30% earlier. This is largely driven by regulators making delays a non pass-through in tariffs and, hence the EPC way of ordering gives better control to the IPPs.

Figure 52: Thermax blue-sky scenario points to 30% higher TP- but still lower than CMP

Particulars	FY18e	Stress case		Blue sky scenario	
	Base	Sales/EB-5/+2%	diff %	Sales/EB +5/-2%	diff %
Revenue	59,878	57,515	-4%	62,242	4%
RM to sales	52%	53%	2%	50%	-2%
EBITDA	5,744	4,077	-29%	7,527	31%
EBITDA margin	9.6%	7%	-3%	12%	2%
Adj. PAT	3,044	1,651	-46%	4,551	50%
EPS	25.5	13.9	-46%	38.2	50%
Implied P/E	25	35	40%	22	-12%
TP	640	485	-24%	840	31%
Upside/(Downside)			-45%		-5%

Source: Deutsche Bank

Thermax - Investment thesis

We have a Sell rating on Thermax, premised upon:

- TMX's order inflows and backlog are at a 7-year low and below the current revenue level. Order inflow visibility remains hazy as large ticket size orders for captive power/ heat from key sectors including cement, steel, oil and gas and sponge iron are unlikely to pick up near term due to excess capacity.
- Limited large orders available in the industry, suggesting high price competition for two of the three orders won by TMX last year.
- Despite TMX's strong balance sheet and prudent management capabilities, current valuations are almost at a 50% premium over the historical average. We also factor in a pick-up in order inflows and earnings growth potential, leaving limited room for outperformance.

Valuations

- We use a three-stage DCF model to arrive at our target price. Stage 1 covers an explicit forecast over FY16-20, amounting to 10% revenue CAGR. Stage 2 has a medium-term assumption of 20% growth over FY20-24E, and Stage 3 is the terminal growth phase of 5%, in line with other Industrial stocks of 5%, reflecting the longer-term Indian GDP growth potential.
- Our WACC of 13.2% is based on 100% equity. Our cost of equity of 13.2% is based on a risk-free rate of 7.0%, an equity risk premium of 7.1% (as per DB estimates for India) and a two-year beta of 0.87.

Risks

- Higher-than-expected GDP growth, lower interest rates and government boost to infrastructure could benefit both the energy and environment segments.
- Sharp upticks in power and industry as well as exports recovery could take orders/ revenue growth beyond 20-25% annually. With increased RM prices on global volatility, there is a downside risk to gross margins.
- 5% change in revenue and 2% change in RM to sales has ~20% and ~38% impact on FY17E adj. PAT respectively.

Model updated:31 October 2016

Running the numbers

Asia

India

Utilities

NTPC Limited

Reuters: NTPC.BO Bloomberg: NTPC IN

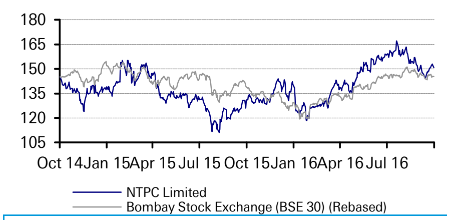
Buy

Price (30 Oct 16)	INR 150.75
Target Price	INR 200.00
52 Week range	INR 118.50 - 167.20
Market Cap (m)	INRm 1,243,004
	USDm 18,610

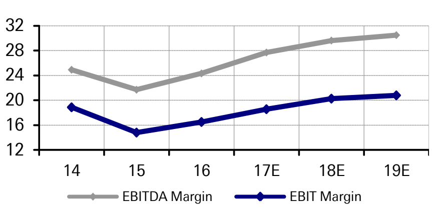
Company Profile

NTPC Limited, established in 1975, is India's largest thermal-power generating company. NTPC's installed capacity, as of June 2016, is 47,178 MW, largely through coal and gas/liquid fuel-based based power projects, and its JVs with an asset base of more than USD 30bn. NTPC is aggressively increasing capacity through greenfield projects and expansion of existing stations, and foray into hydro-power, non-conventional power generation and captive coal mining.

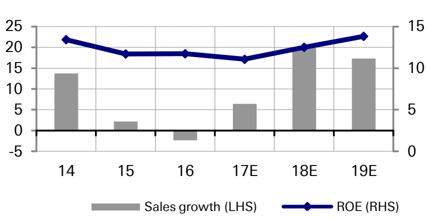
Price Performance



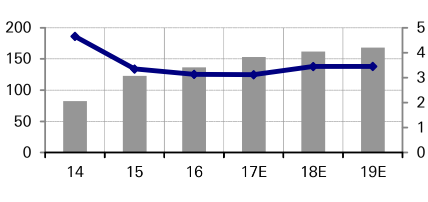
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Mar	2014	2015	2016	2017E	2018E	2019E
Financial Summary						
DB EPS (INR)	13.83	11.61	11.79	12.54	15.30	18.41
Reported EPS (INR)	13.83	12.12	12.31	12.54	15.30	18.41
DPS (INR)	5.75	2.50	3.35	3.76	4.59	5.52
BVPS (INR)	106.3	100.6	109.3	117.3	127.2	139.1
Weighted average shares (m)	8,245	8,245	8,245	8,245	8,245	8,245
Average market cap (INRm)	1,064,826	1,134,133	1,081,605	1,243,004	1,243,004	1,243,004
Enterprise value (INRm)	1,756,237	2,135,303	2,307,179	2,718,349	2,938,764	3,168,787
Valuation Metrics						
P/E (DB) (x)	9.3	11.8	11.1	12.0	9.9	8.2
P/E (Reported) (x)	9.3	11.3	10.7	12.0	9.9	8.2
P/BV (x)	1.08	1.42	1.18	1.28	1.19	1.08
FCF Yield (%)	nm	nm	nm	nm	nm	nm
Dividend Yield (%)	4.5	1.8	2.6	2.5	3.0	3.7
EV/Sales (x)	2.2	2.6	2.9	3.2	2.9	2.7
EV/EBITDA (x)	8.9	12.2	12.0	11.7	9.9	8.8
EV/EBIT (x)	11.8	17.9	17.7	17.5	14.4	12.9
Income Statement (INRm)						
Sales revenue	789,217	806,220	787,055	837,815	1,005,912	1,179,842
Gross profit	245,680	225,529	252,337	325,824	400,211	479,100
EBITDA	196,814	175,123	191,632	232,235	298,230	360,060
Depreciation	47,700	55,646	61,534	76,514	94,139	114,467
Amortisation	0	0	0	0	0	0
EBIT	149,114	119,477	130,098	155,720	204,091	245,593
Net interest income(expense)	-32,031	-35,704	-41,513	-49,911	-59,198	-71,137
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	27,774	20,789	12,341	9,699	12,754	15,298
Profit before tax	144,858	104,562	100,926	115,509	157,647	189,754
Income tax expense	30,824	4,638	-589	12,128	31,529	37,951
Minorities	0	0	0	0	0	0
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	114,034	99,924	101,514	103,380	126,118	151,803
DB adjustments (including dilution)	0	-4,193	-4,314	0	0	0
DB Net profit	114,034	95,731	97,200	103,380	126,118	151,803
Cash Flow (INRm)						
Cash flow from operations	155,855	196,643	150,733	98,036	109,801	62,114
Net Capex	-244,135	-269,394	-327,920	-299,812	-261,770	-212,199
Free cash flow	-88,280	-72,751	-177,187	-201,775	-151,970	-150,085
Equity raised/(bought back)	0	0	0	0	0	0
Dividends paid	-57,009	-24,280	-31,890	-35,674	-41,424	-50,113
Net inc/(dec) in borrowings	113,882	180,271	103,766	271,376	217,894	186,810
Other investing/financing cash flows	16,225	13,989	15,431	0	0	0
Net cash flow	-15,182	97,230	-89,880	33,927	24,500	-13,389
Change in working capital	*-11,996*	*44,454*	*-19,199*	*71,171*	*76,921*	*24,777*
Balance Sheet (INRm)						
Cash and other liquid assets	170,507	142,516	53,933	87,860	112,360	98,971
Tangible fixed assets	1,380,323	1,594,071	1,860,456	2,236,783	2,592,692	2,919,358
Goodwill/intangible assets	6	6	0	0	0	0
Associates/investments	33,004	19,015	3,584	3,584	3,584	3,584
Other assets	416,559	440,153	486,517	450,648	430,220	447,167
Total assets	2,000,399	2,195,762	2,404,491	2,778,875	3,138,856	3,469,080
Interest bearing debt	894,922	1,162,701	1,283,092	1,566,789	1,811,705	2,028,339
Other liabilities	228,638	203,242	220,506	244,564	278,348	294,100
Total liabilities	1,123,560	1,365,942	1,503,598	1,811,353	2,090,052	2,322,439
Shareholders' equity	876,839	829,819	900,893	967,522	1,048,804	1,146,642
Minorities	0	0	0	0	0	0
Total shareholders' equity	876,839	829,819	900,893	967,522	1,048,804	1,146,642
Net debt	*724,415*	*1,020,185*	*1,229,159*	*1,478,929*	*1,699,345*	*1,929,368*
Key Company Metrics						
Sales growth (%)	13.8	2.2	-2.4	6.4	20.1	17.3
DB EPS growth (%)	5.9	-16.1	1.5	6.4	22.0	20.4
EBITDA Margin (%)	24.9	21.7	24.3	27.7	29.6	30.5
EBIT Margin (%)	18.9	14.8	16.5	18.6	20.3	20.8
Payout ratio (%)	41.6	20.6	27.2	30.0	30.0	30.0
ROE (%)	13.4	11.7	11.7	11.1	12.5	13.8
Capex/sales (%)	30.9	33.4	41.7	35.8	26.0	18.0
Capex/depreciation (x)	5.1	4.8	5.3	3.9	2.8	1.9
Net debt/equity (%)	82.6	122.9	136.4	152.9	162.0	168.3
Net interest cover (x)	4.7	3.3	3.1	3.1	3.4	3.5

Source: Company data, Deutsche Bank estimates

Model updated:01 November 2016

Running the numbers

Asia

India

Utilities

Reliance Power

Reuters: RPOL.BO Bloomberg: RPWR IN

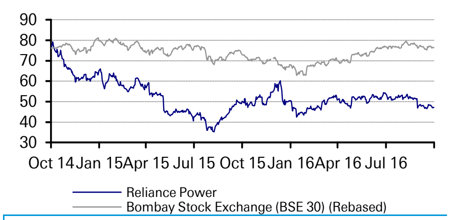
Hold

Price (30 Oct 16)	INR 47.15
Target Price	INR 45.00
52 Week range	INR 42.55 - 60.20
Market Cap (m)	INRm 132,262
	USDm 1,980

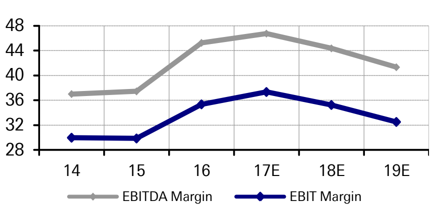
Company Profile

Reliance Power (RPL) is the power generation arm of Reliance Anil Dhirubhai Ambani Group. It currently has 5,760 MW operational coal-based power projects. It has an ambitious pipeline of projects to attain 16 GW size in next few years, including a big presence in Green Energy. Apart from the power business, the company has four captive coal mines in India and 3 coal concessions in Indonesia each with aggregate coal reserves of c.2 bn tonnes.

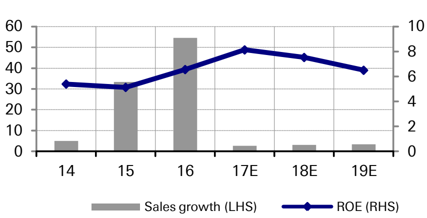
Price Performance



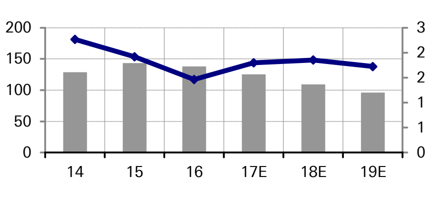
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Mar	2014	2015	2016	2017E	2018E	2019E
Financial Summary						
DB EPS (INR)	3.67	3.67	4.86	6.25	6.14	5.59
Reported EPS (INR)	3.67	3.67	4.86	6.25	6.14	5.59
DPS (INR)	0.00	0.00	1.00	0.00	0.00	0.00
BVPS (INR)	69.6	73.6	74.5	79.3	83.9	88.2
Weighted average shares (m)	2,797	2,805	2,805	2,805	2,805	2,805
Average market cap (INRm)	195,287	212,019	134,844	132,262	132,262	132,262
Enterprise value (INRm)	444,618	499,525	415,202	402,579	381,385	361,921
Valuation Metrics						
P/E (DB) (x)	19.0	20.6	9.9	7.5	7.7	8.4
P/E (Reported) (x)	19.0	20.6	9.9	7.5	7.7	8.4
P/BV (x)	1.01	0.77	0.67	0.59	0.56	0.53
FCF Yield (%)	nm	nm	19.0	25.2	33.0	31.5
Dividend Yield (%)	0.0	0.0	2.1	0.0	0.0	0.0
EV/Sales (x)	8.6	7.2	3.9	3.7	3.4	3.1
EV/EBITDA (x)	23.2	19.3	8.6	7.9	7.6	7.5
EV/EBIT (x)	28.6	24.2	11.0	9.8	9.6	9.5
Income Statement (INRm)						
Sales revenue	51,748	69,034	106,701	109,531	112,972	116,910
Gross profit	19,159	25,857	48,302	51,217	50,142	48,336
EBITDA	19,159	25,857	48,302	51,217	50,142	48,336
Depreciation	3,639	5,237	10,565	10,301	10,301	10,301
Amortisation	0	0	0	0	0	0
EBIT	15,521	20,620	37,737	40,917	39,841	38,036
Net interest income(expense)	-6,844	-10,742	-25,765	-22,737	-21,470	-22,074
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	3,712	2,986	3,684	3,746	3,163	3,648
Profit before tax	12,388	12,864	15,656	21,926	21,534	19,610
Income tax expense	2,121	2,580	2,036	4,385	4,307	3,922
Minorities	0	0	0	0	0	0
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	10,267	10,283	13,619	17,541	17,228	15,688
DB adjustments (including dilution)	0	0	0	0	0	0
DB Net profit	10,267	10,283	13,619	17,541	17,228	15,688
Cash Flow (INRm)						
Cash flow from operations	23,103	13,991	46,821	43,325	43,670	41,687
Net Capex	-44,131	-21,602	-21,167	-10,049	0	0
Free cash flow	-21,028	-7,611	25,653	33,276	43,670	41,687
Equity raised/(bought back)	0	0	0	0	0	0
Dividends paid	0	0	-3,376	-4,245	-4,169	-3,796
Net inc/(dec) in borrowings	16,426	34,329	-1,464	-13,843	-11,992	-34,506
Other investing/financing cash flows	-2,884	-42,069	-17,055	-22,737	-21,470	-22,074
Net cash flow	-7,486	-15,352	3,758	-7,549	6,040	-18,690
Change in working capital	*-50,918*	*4,401*	*15,816*	*-296*	*11,367*	*-12,314*
Balance Sheet (INRm)						
Cash and other liquid assets	26,411	11,708	31,576	27,773	36,976	21,934
Tangible fixed assets	460,937	491,643	491,319	491,068	480,767	470,467
Goodwill/intangible assets	0	0	0	0	0	0
Associates/investments	1,414	8,609	8,626	8,626	8,626	8,626
Other assets	71,448	108,299	98,514	99,743	102,045	104,930
Total assets	560,209	620,259	630,034	627,210	628,414	605,957
Interest bearing debt	277,141	307,807	320,560	306,716	294,725	260,219
Other liabilities	88,370	106,117	100,397	98,120	98,257	98,415
Total liabilities	365,510	413,924	420,957	404,836	392,982	358,634
Shareholders' equity	194,684	206,320	209,077	222,373	235,432	247,323
Minorities	15	15	0	0	0	0
Total shareholders' equity	194,699	206,335	209,077	222,373	235,432	247,323
Net debt	*250,729*	*296,099*	*288,984*	*278,943*	*257,749*	*238,284*
Key Company Metrics						
Sales growth (%)	5.0	33.4	54.6	2.7	3.1	3.5
DB EPS growth (%)	1.8	-0.1	32.4	28.8	-1.8	-8.9
EBITDA Margin (%)	37.0	37.5	45.3	46.8	44.4	41.3
EBIT Margin (%)	30.0	29.9	35.4	37.4	35.3	32.5
Payout ratio (%)	0.0	0.0	20.6	0.0	0.0	0.0
ROE (%)	5.4	5.1	6.6	8.1	7.5	6.5
Capex/sales (%)	85.4	31.4	19.9	9.2	0.0	0.0
Capex/depreciation (x)	12.1	4.1	2.0	1.0	0.0	0.0
Net debt/equity (%)	128.8	143.5	138.2	125.4	109.5	96.3
Net interest cover (x)	2.3	1.9	1.5	1.8	1.9	1.7

Source: Company data, Deutsche Bank estimates

Model updated:26 October 2016

Running the numbers

Asia

India

Manufacturing

BHEL

Reuters: BHEL.BO Bloomberg: BHEL IN

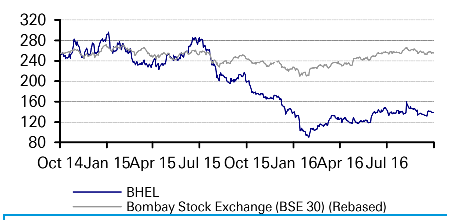
Buy

Price (30 Oct 16)	INR 138.80
Target Price	INR 200.00
52 Week range	INR 90.60 - 200.65
Market Cap (m)	INRm 339,727
	USDm 5,086

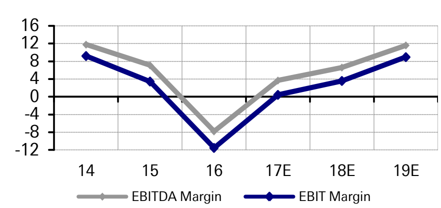
Company Profile

Bharat Heavy Electricals Limited (BHEL) manufactures power plant equipment. The company's products include gas turbines, generators, thermal sets, diesel shunters, turbo sets, hydro sets, power transformers, switch gears, circuit breakers and boilers. BHEL also manufactures compressors, valves, rectifiers, pumps, capacitors, oil rigs, drive turbines, and castings and forgings.

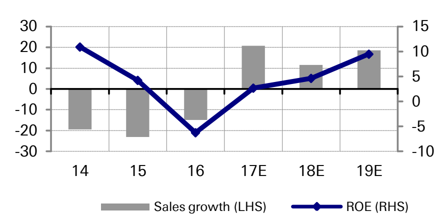
Price Performance



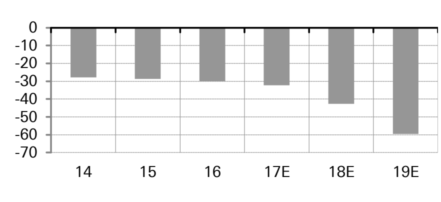
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Mar	2014	2015	2016	2017E	2018E	2019E
Financial Summary						
DB EPS (INR)	14.14	5.80	-5.33	3.65	6.49	13.92
Reported EPS (INR)	14.14	5.80	-8.58	3.65	6.49	13.92
DPS (INR)	2.83	1.16	0.40	0.40	1.95	4.18
BVPS (INR)	135.0	139.3	135.0	138.2	142.4	151.5
Weighted average shares (m)	2,448	2,448	2,448	2,448	2,448	2,448
Average market cap (INRm)	388,190	588,448	487,963	339,727	339,727	339,727
Enterprise value (INRm)	291,806	486,755	381,732	223,835	184,354	112,320
Valuation Metrics						
P/E (DB) (x)	11.2	41.5	nm	38.0	21.4	10.0
P/E (Reported) (x)	11.2	41.5	nm	38.0	21.4	10.0
P/BV (x)	1.44	1.69	0.84	1.00	0.97	0.92
FCF Yield (%)	12.9	nm	1.2	3.2	13.3	24.7
Dividend Yield (%)	1.8	0.5	0.2	0.3	1.4	3.0
EV/Sales (x)	0.8	1.6	1.5	0.7	0.5	0.3
EV/EBITDA (x)	6.5	23.2	nm	20.0	8.2	2.4
EV/EBIT (x)	8.3	47.7	nm	165.4	15.2	3.1
Income Statement (INRm)						
Sales revenue	383,888	295,420	251,379	303,367	338,467	401,352
Gross profit	146,288	115,671	80,303	107,654	127,600	160,386
EBITDA	45,198	20,986	-19,585	11,173	22,371	46,567
Depreciation	9,829	10,773	9,356	9,819	10,226	10,606
Amortisation	0	0	0	0	0	0
EBIT	35,369	10,213	-28,941	1,353	12,145	35,961
Net interest income(expense)	4,984	7,195	7,362	7,438	6,505	8,874
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	-60	-101	-11,925	0	0	0
Other pre-tax income/(expense)	9,850	4,093	6,871	4,551	5,077	6,020
Profit before tax	50,203	21,501	-14,708	13,342	23,727	50,855
Income tax expense	15,535	7,207	-5,633	4,403	7,830	16,782
Minorities	0	0	0	0	0	0
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	34,608	14,193	-21,000	8,939	15,897	34,073
DB adjustments (including dilution)	0	0	7,950	0	0	0
DB Net profit	34,608	14,193	-13,050	8,939	15,897	34,073
Cash Flow (INRm)						
Cash flow from operations	57,579	-12,132	10,842	15,807	50,061	88,993
Net Capex	-7,378	-4,140	-5,067	-5,000	-5,000	-5,000
Free cash flow	50,202	-16,271	5,774	10,807	45,061	83,993
Equity raised/(bought back)	0	0	0	0	0	0
Dividends paid	-8,104	-3,412	-1,178	-1,145	-5,580	-11,960
Net inc/(dec) in borrowings	-244	-438	653	0	0	0
Other investing/financing cash flows	6,931	25	-2,457	0	0	0
Net cash flow	48,784	-20,096	2,792	9,661	39,481	72,034
Change in working capital	*-57*	*-11,833*	*11,052*	*-2,952*	*23,937*	*44,315*
Balance Sheet (INRm)						
Cash and other liquid assets	118,729	98,127	100,860	110,521	150,002	222,036
Tangible fixed assets	53,351	46,583	42,786	37,966	32,740	27,134
Goodwill/intangible assets	0	0	0	0	0	0
Associates/investments	4,202	4,177	6,634	6,634	6,634	6,634
Other assets	551,630	535,784	516,622	557,142	545,212	551,532
Total assets	727,912	684,671	666,901	712,263	734,588	807,336
Interest bearing debt	26,548	610	1,263	1,263	1,263	1,263
Other liabilities	370,894	343,215	335,105	372,673	384,681	435,315
Total liabilities	397,441	343,825	336,368	373,936	385,944	436,578
Shareholders' equity	330,471	340,846	330,534	338,327	348,644	370,758
Minorities	0	0	0	0	0	0
Total shareholders' equity	330,471	340,846	330,534	338,327	348,644	370,758
Net debt	*-92,182*	*-97,517*	*-99,597*	*-109,258*	*-148,739*	*-220,773*
Key Company Metrics						
Sales growth (%)	-19.4	-23.0	-14.9	20.7	11.6	18.6
DB EPS growth (%)	-47.7	-59.0	na	na	77.8	114.3
EBITDA Margin (%)	11.8	7.1	-7.8	3.7	6.6	11.6
EBIT Margin (%)	9.2	3.5	-11.5	0.4	3.6	9.0
Payout ratio (%)	20.0	20.0	nm	11.0	30.0	30.0
ROE (%)	10.9	4.2	-6.3	2.7	4.6	9.5
Capex/sales (%)	1.9	1.4	2.0	1.6	1.5	1.2
Capex/depreciation (x)	0.8	0.4	0.5	0.5	0.5	0.5
Net debt/equity (%)	-27.9	-28.6	-30.1	-32.3	-42.7	-59.5
Net interest cover (x)	nm	nm	nm	nm	nm	nm

Source: Company data, Deutsche Bank estimates

Model updated:11 August 2016

Running the numbers

Asia

India

Manufacturing

Thermax Limited

Reuters: THMX.BO Bloomberg: TMX IN

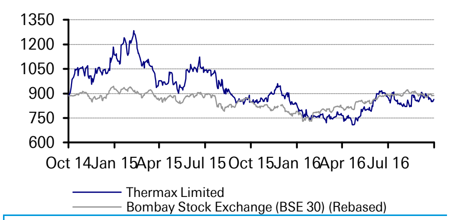
Sell

Price (30 Oct 16)	INR 864.40
Target Price	INR 640.00
52 Week range	INR 708.00 - 960.00
Market Cap (m)	INRm 102,998
	USDm 1,542

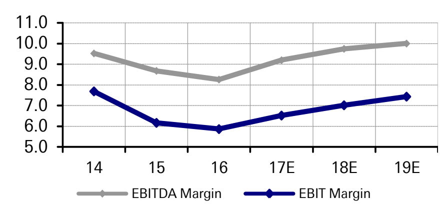
Company Profile

Thermax manufactures energy equipments and operates through various divisions manufacturing boilers, heat recovery generators, water treatment plants, air pollution equipment.

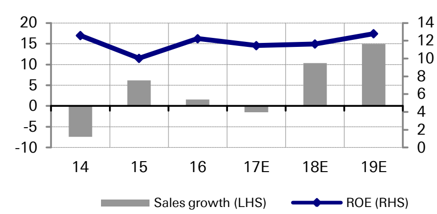
Price Performance



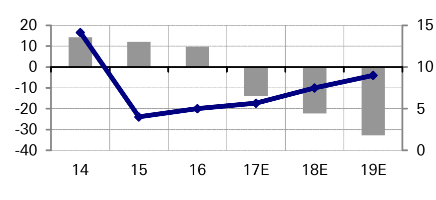
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Mar	2014	2015	2016	2017E	2018E	2019E
Financial Summary						
DB EPS (INR)	24.14	21.75	23.11	23.40	25.54	30.59
Reported EPS (INR)	20.64	17.61	23.11	23.40	25.54	30.59
DPS (INR)	6.00	7.00	6.00	6.00	7.00	8.00
BVPS (INR)	171.1	180.1	197.6	210.9	227.9	250.1
Weighted average shares (m)	119	119	119	119	119	119
Average market cap (INRm)	73,130	113,376	109,168	102,998	102,998	102,998
Enterprise value (INRm)	70,553	108,610	102,768	91,824	89,151	84,210
Valuation Metrics						
P/E (DB) (x)	25.4	43.7	39.6	36.9	33.8	28.3
P/E (Reported) (x)	29.7	54.0	39.6	36.9	33.8	28.3
P/BV (x)	4.31	5.87	3.83	4.10	3.79	3.46
FCF Yield (%)	0.6	1.6	1.5	4.8	3.2	5.4
Dividend Yield (%)	1.0	0.7	0.7	0.7	0.8	0.9
EV/Sales (x)	1.4	2.0	1.9	1.7	1.5	1.2
EV/EBITDA (x)	14.7	23.4	22.9	18.7	15.5	12.4
EV/EBIT (x)	18.2	33.0	32.3	26.4	21.5	16.7
Income Statement (INRm)						
Sales revenue	50,283	53,396	54,236	53,412	58,935	67,747
Gross profit	4,074	4,077	3,701	4,055	4,801	5,739
EBITDA	4,790	4,636	4,481	4,913	5,744	6,776
Depreciation	922	1,341	1,298	1,429	1,607	1,738
Amortisation	0	0	0	0	0	0
EBIT	3,868	3,294	3,183	3,484	4,137	5,038
Net interest income(expense)	-274	-820	-634	-615	-552	-560
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	-417	-494	0	0	0	0
Other pre-tax income/(expense)	716	1,209	1,346	879	973	1,115
Profit before tax	3,893	3,190	3,894	3,748	4,558	5,593
Income tax expense	1,696	1,708	1,468	1,312	1,523	1,808
Minorities	-262	-616	-328	-352	-8	141
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	2,460	2,098	2,754	2,789	3,044	3,645
DB adjustments (including dilution)	417	494	0	0	0	0
DB Net profit	2,877	2,592	2,754	2,789	3,044	3,645
Cash Flow (INRm)						
Cash flow from operations	3,097	2,522	2,609	9,399	4,805	7,083
Net Capex	-2,651	-672	-989	-4,428	-1,550	-1,550
Free cash flow	447	1,850	1,620	4,971	3,255	5,533
Equity raised/(bought back)	0	0	0	0	0	0
Dividends paid	-837	-1,005	-860	-860	-1,004	-1,147
Net inc/(dec) in borrowings	3,383	-1,449	232	-1,200	0	0
Other investing/financing cash flows	-1,651	-749	-318	1,913	437	-726
Net cash flow	1,341	-1,353	673	4,823	2,688	3,660
Change in working capital	*540*	*471*	*-35*	*5,798*	*583*	*2,116*
Balance Sheet (INRm)						
Cash and other liquid assets	4,508	3,494	4,002	8,873	11,553	15,354
Tangible fixed assets	15,795	14,741	14,393	17,392	17,335	17,147
Goodwill/intangible assets	0	0	0	0	0	0
Associates/investments	7,079	8,217	9,793	8,849	8,849	9,849
Other assets	32,031	31,828	34,172	30,368	32,892	37,223
Total assets	59,414	58,281	62,359	65,481	70,628	79,573
Interest bearing debt	7,614	6,165	6,397	5,197	5,197	5,197
Other liabilities	30,028	29,874	31,414	33,808	36,915	43,362
Total liabilities	37,642	36,039	37,810	39,004	42,111	48,558
Shareholders' equity	20,383	21,464	23,551	25,127	27,159	29,797
Minorities	1,397	780	998	1,350	1,358	1,218
Total shareholders' equity	21,780	22,244	24,549	26,477	28,517	31,014
Net debt	*3,106*	*2,671*	*2,395*	*-3,676*	*-6,357*	*-10,158*
Key Company Metrics						
Sales growth (%)	-7.4	6.2	1.6	-1.5	10.3	15.0
DB EPS growth (%)	-10.1	-9.9	6.2	1.3	9.2	19.7
EBITDA Margin (%)	9.5	8.7	8.3	9.2	9.7	10.0
EBIT Margin (%)	7.7	6.2	5.9	6.5	7.0	7.4
Payout ratio (%)	29.1	39.8	26.0	25.6	27.4	26.2
ROE (%)	12.6	10.0	12.2	11.5	11.6	12.8
Capex/sales (%)	5.3	1.3	1.8	8.3	2.6	2.3
Capex/depreciation (x)	2.9	0.5	0.8	3.1	1.0	0.9
Net debt/equity (%)	14.3	12.0	9.8	-13.9	-22.3	-32.8
Net interest cover (x)	14.1	4.0	5.0	5.7	7.5	9.0

Source: Company data, Deutsche Bank estimates

Appendices

Appendix-I - List of coal fired plants more than 25 years old

Figure 53: List of coal fired plants more than 25 years old

Sector	Utility	Station	Unit
State	IPGPCL	RAJGHAT TPS	68
State	HPGCL	PANIPAT TPS	650
State	PSPCL	GND TPS(BHATINDA)	440
State	PSPCL	ROPAR TPS	840
State	RRVUNL	KOTA TPS	640
State	UPRVUNL	OBRA TPS	1,278
State	UPRVUNL	PANKI TPS	210
State	UPRVUNL	HARDUAGANJ TPS	165
State	UPRVUNL	PARICHHA TPS	220
State	UPRVUNL	ANPARA TPS	630
State	GSECL	UKAI TPS	850
State	GSECL	GANDHI NAGAR TPS	240
State	GSECL	WANAKBORI TPS	1,260
State	GSECL	SIKKA REP. TPS	120
State	MPPGCL	SATPURA TPS	830
State	MPPGCL	AMARKANTAK EXT TPS	240
State	CSPGCL	DSPM TPS Korba	440
State	CSPGCL	KORBA-WEST TPS	840
State	MAHAGENCO	KHAPARKHEDA TPS	210
State	MAHAGENCO	NASIK TPS	630
State	MAHAGENCO	KORADI TPS	1,040
State	MAHAGENCO	BHUSAWAL TPS	420
State	MAHAGENCO	PARLI TPS	630
State	MAHAGENCO	CHANDRAPUR(MAH.)	840
State	APGENCO	Dr. N.TATA RAO TPS	630
State	TSGENCO	KOTHAGUDEM TPS	720
State	TSGENCO	RAMAGUNDEM - B TPS	63
State	KPCL	RAICHUR TPS	420
State	TNGDCL	ENNORE TPS	450
State	TNGDCL	TUTICORIN TPS	630
State	TNGDCL	METTUR TPS	630
State	JSEB	PATRATU TPS	770
State	BSEB	BARAUNI TPS	210
State	WBPDC	BANDEL TPS	450
State	WBPDC	SANTALDIH TPS	480
State	WBPDC	KOLAGHAT TPS	420
State	DPL	D.P.L. TPS	330
State	APGPCL	CHANDRAPUR(ASSAM)	60
Central	NTPC	BADARPUR TPS	705
Central	NTPC	SINGRAULI STPS	2,000
Central	NTPC	RIHAND STPS	1,000
Central	NTPC	UNCHAHAR TPS	420

Source: CEA, Deutsche Bank

Figure 53: List of coal fired plants more than 25 years old Cont'd

Sector	Utility	Station	Unit
Central	NTPC	TANDA TPS	220
Central	NTPC	KORBA STPS	2,100
Central	NTPC	VINDHYACHAL STPS	840
Central	NTPC	RAMAGUNDEM STPS	2,100
Central	NTPC	TALCHER (OLD) TPS	460
Central	NTPC	FARAKKA STPS	600
Central	K.B.U.N.L	MUZAFFARPUR TPS	220
Central	DVC	CHANDRAPURA(DVC) TPS	390
Central	DVC	DURGAPUR TPS	340
Central	DVC	BOKARO `B` TPS	210
Central	NLC	NEYVELI TPS- I	600
Central	NLC	NEYVELI TPS-II	630
Private	TATA PCL	TROMBAY TPS	650
Private	TOR. POW.	SABARMATI (C STATION)	60
Private	TOR. POW.	SABARMATI (D-F STATION)	340
Private	CESC	NEW COSSIPORE TPS	160
Private	CESC	TITAGARH TPS	240
Total			**34,278**

By company

NTPC	10,445
MAHAGENCO	3,770
UPRVUNL	2,503
GSECL	2,470
TNGDCL	1,710
WBPDC	1,350
PSPCL	1,280
CSPGCL	1,280
NLC	1,230
MPPGCL	1,070
DVC	940
TSGENCO	783
JSEB	770
HPGCL	650
TATA PCL	650
RRVUNL	640
APGENCO	630
KPCL	420
TOR. POW.	400
CESC	400
DPL	330
K.B.U.N.L	220
BSEB	210
IPGPCL	68
APGPCL	60
Total	**34,278**

By sectors

State	19,993
Central	12,835
Private	1,450
Total	**34,278**

Source: CEA, Deutsche Bank

Appendix-II - Acknowledgement

The author of this report, Abhishek Puri wishes to acknowledge the contribution made by Sanit Visaria, an employee of CRISIL Global Research & Analytics, a division of CRISIL Limited, a third-party provider of offshore research support services to Deutsche Bank.

Appendix 1

Important Disclosures

*Other information available upon request

*Prices are current as of the end of the previous trading session unless otherwise indicated and are sourced from local exchanges via Reuters, Bloomberg and other vendors . Other information is sourced from Deutsche Bank, subject companies, and other sources. For disclosures pertaining to recommendations or estimates made on securities other than the primary subject of this research, please see the most recently published company report or visit our global disclosure look-up page on our website at http://gm.db.com/ger/disclosure/DisclosureDirectory.eqsr

Analyst Certification

The views expressed in this report accurately reflect the personal views of the undersigned lead analyst about the subject issuers and the securities of those issuers. In addition, the undersigned lead analyst has not and will not receive any compensation for providing a specific recommendation or view in this report. Abhishek Puri

Equity rating key

Buy: Based on a current 12- month view of total share-holder return (TSR = percentage change in share price from current price to projected target price plus pro-jected dividend yield) , we recommend that investors buy the stock.

Sell: Based on a current 12-month view of total share-holder return, we recommend that investors sell the stock

Hold: We take a neutral view on the stock 12-months out and, based on this time horizon, do not recommend either a Buy or Sell.

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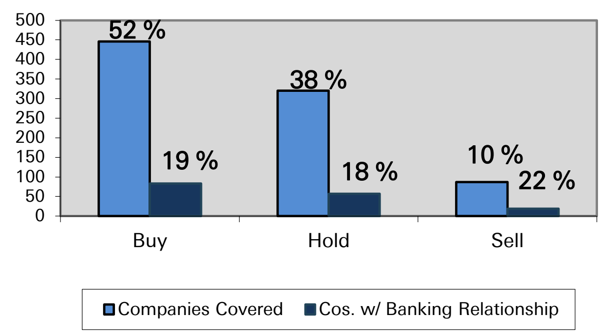
Equity rating dispersion and banking relationships



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