

BUY

Target Price: Rs 131

Bharat Heavy Electricals

ENGINEERING

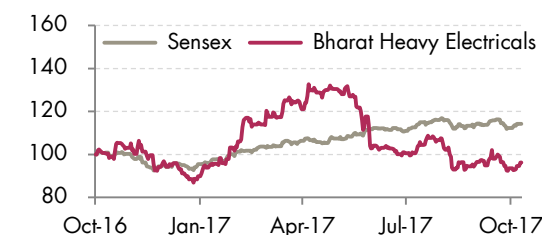
Big play on 3x BTG opportunity

CMP : Rs 85
Potential Upside : 54%

MARKET DATA

No. of Shares : 3,671 mn
Market Cap : Rs 311 bn
Free Float : 37%
Avg. daily vol (6mth) : 8.1 mn shares
52-w High / Low : Rs 122 / Rs 77
Bloomberg : BHEL IB Equity
Promoter holding : 63%
FII / DII : 16% / 17%

Price performance



Key drivers

Financial summary (standalone)

Y/E	Sales	EBITDA	Adj PAT	Con. EPS*		Change		RoE	EV/E	
Mar	(Rs mn)	(Rs mn)	(Rs mn)	(Rs.)	EPS (Rs.)	YOY (%)	P/E (x)	(%)	(x)	DPS (Rs)
FY16	249,408	(16,678)	(12,639)	-	(3.4)	(188.4)	(24.6)	(4.1)	(12.7)	2.0
FY17	275,876	11,136	4,959	-	1.4	(139.2)	62.8	1.6	18.6	3.0
FY18E	304,824	19,689	12,659	3.3	3.4	155.3	24.6	3.9	8.3	3.0
FY19E	349,329	34,184	24,002	4.8	6.5	89.6	13.0	7.4	3.7	4.0

Source: *Consensus broker estimates, Company, Axis Capital

(Rs bn)	FY17	FY18E	FY19E
Order inflow	235	417	528
Backlog	1,052	1,152	1,315
Margin	3.9%	6.3%	9.5%

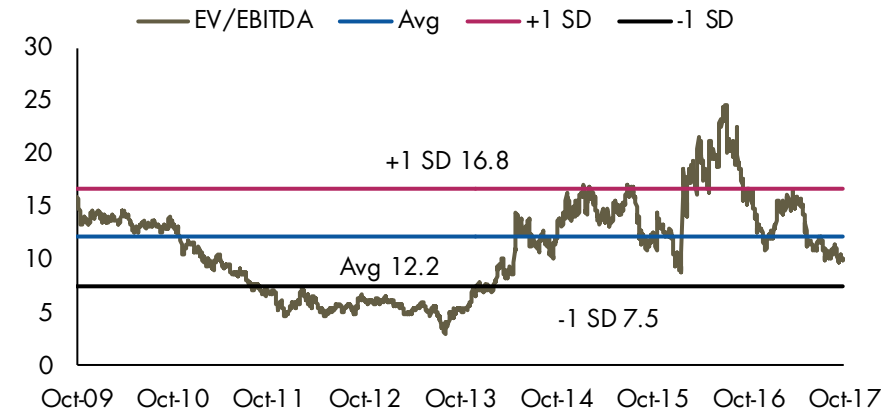
BTG space to grow 3x on revised emission norms; BHEL key gainer

- ♦ **BTG market to grow 3x:** New emission norms for coal-fired plants are set to expand the power Boiler-Turbine-Generator (BTG) space three-fold. This entails increased market opportunity for new as well as retrofit equipment. In existing power plants, BHEL to be a key beneficiary given its lion's market share of ~55% and consolidation of market
 - **New equipment:** Market to expand more than 2x from USD 3 bn p.a to 7 bn p.a.
 - **Increased volume:** Scrapping of old plants to increase BTG ordering to ~12-14 GW p.a. from 8 GW p.a. over FY12-17
 - **Improved realization:** BTG costs will increase by Rs 7 mn/MW to ~Rs 32 mn/MW due to additional equipment
 - **Retrofit opportunity:** Installing air pollution control equipment in existing and under-construction plants. Opportunity size at USD 12 bn or USD 3 bn p.a. from FY19 assuming ordering over 4-5 years. Market leader BHEL (55% share of installed base) to get a lion share of the opportunity
- ♦ **Competitive intensity reducing:** BGR and Thermax have exited the space; L&T and Toshiba are focusing more on exports. Consequently, manufacturing capacity is only around half (15 GW) of that perceived by the street (30 GW)
- ♦ **Operating leverage to kick in** as BHEL's capacity utilization is low at <50% and fixed cost are high at Rs 90 bn p.a.
 - **Expect BHEL's executable order book to increase by 50% to ~Rs 900 bn by end FY18.** Current = Rs 618 bn + Rs 180 bn clearance of Telengana project + Rs 250 bn finalization of L1 projects – Rs 240 bn execution over 9MFY18
 - Increase in executable order backlog to result in 50% growth in revenue over FY17-20; EBITDA to rise to 5x and PAT to ~7x
- ♦ **Debtors days to decline with normalization of retention days:** We expect BHEL's cash flows to improve on falling debtors days, resulting in net cash balance of ~Rs 200 bn or 70% of current market cap
- ♦ **BHEL's stock is trading at EV of ~Rs 200 bn (Net cash = Rs 110 bn)** equating to 8x FY18E EV/EBITDA (FY18e net cash = Rs 150 bn, EBITDA = Rs 20 bn) or 4x FY19E EV/EBITDA (FY19e net cash = Rs 200 bn, EBITDA = Rs 34 bn)
- ♦ **FY19 not peak earnings for BHEL.** We expect earnings to post CAGR of ~35% after FY19 for next 2 years

Valuations

- Historically, BHEL has traded at average multiple of 19x P/E and 12x EV/EBITDA on 12m forward consensus estimates and 15x P/E and 10x EV/EBITDA on 2-yr forward consensus estimates over last ten years
- We have **BUY** rating on BHEL with TP of Rs 131 (20x FY19E), which equates to exit multiple of ~9x FY19E EBITDA
- Attractive DCF valuation:** Net present value of BHEL's 10-year cash flow provides 26% upside to the current enterprise value, while terminal value (at nil terminal growth rate) would add another 81% to the upside

Valuation inexpensive



Source: Axis Capital

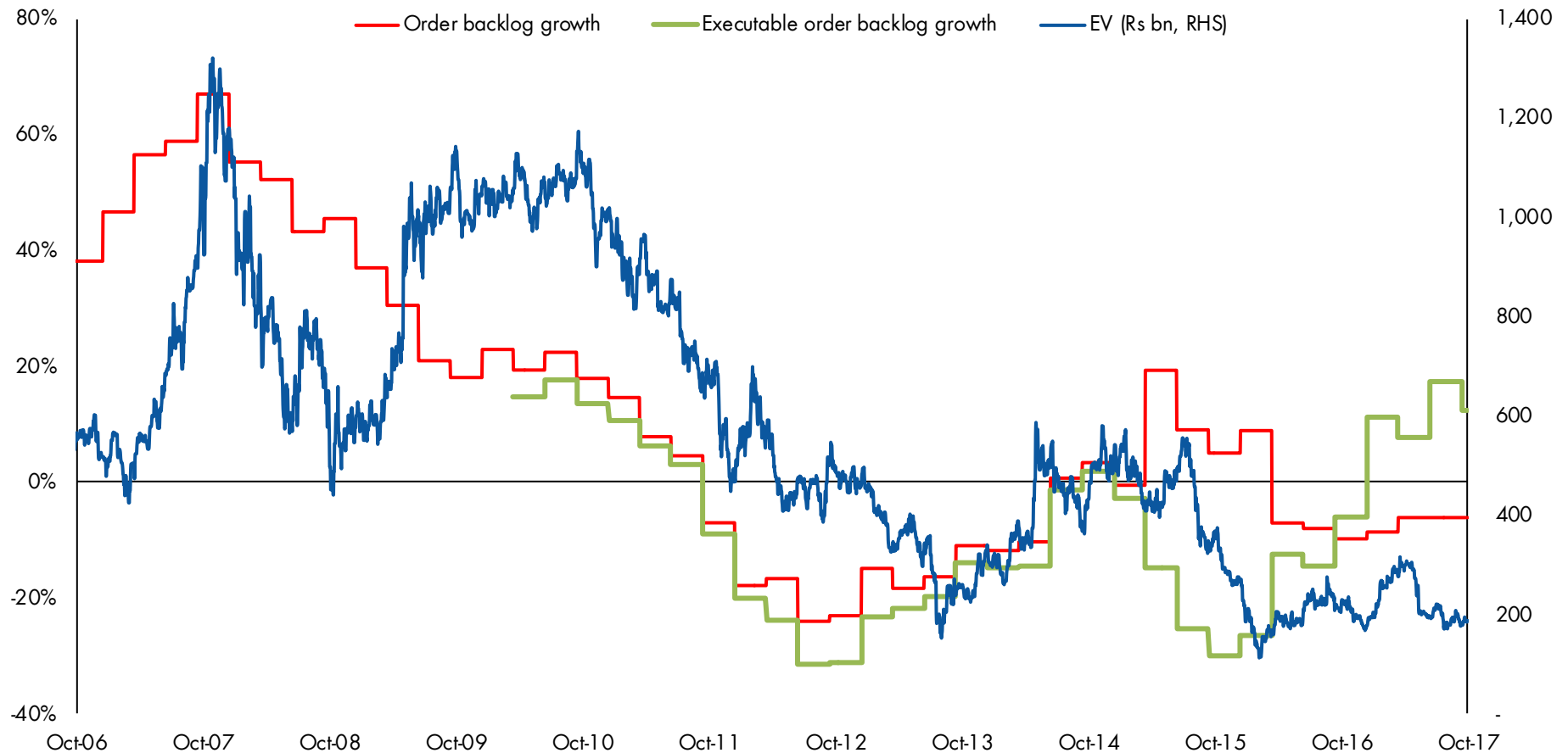
Net present value of 10-year cash flows provides 26% upside, terminal value additional 81% upside

	FY18E	FY19E	FY20E	FY21E	FY22E	FY23E	FY24E	FY25E	FY26E	FY27E	Terminal Value
Revenues	304,824	349,329	404,500	447,721	470,107	493,612	518,293	544,207	571,418	599,989	
EBIT	9,454	25,455	43,591	56,298	61,727	67,549	73,792	80,482	87,648	95,321	
Tax	2,836	7,637	12,641	15,763	16,666	17,563	18,448	20,121	21,912	23,830	
D&A	8,438	8,729	8,331	8,771	8,947	9,126	9,308	9,494	9,684	9,878	
Changes in WC	41,270	25,127	15,066	(18,311)	(5,597)	(5,876)	(6,170)	(6,479)	(6,803)	(7,143)	
Capex	4,000	4,000	8,000	8,000	8,400	8,820	9,261	9,724	10,210	10,721	
FCFF	52,326	47,675	46,347	22,995	40,011	44,416	49,221	53,653	58,407	63,505	529,209
WACC	12%										
									Discount factor		0.32
NPV	262,978									NPV	170,391
Current EV	209,342									Current EV	209,342
Upside	26%								Additional upside		81%

Source: Axis Capital

Stock follows executable order backlog

Growth in order backlog and EV progression in past 10 years



Source: Company, Bloomberg, Axis Capital

BTG market set to triple

BTG to grow 3x on revised emission norms; BHEL key beneficiary

- ♦ **New emission norms for coal power plants** as notified by Ministry of Environment & Forest (MOEF) has to be implemented by end 2017. However, we assume the compliance deadline will be negotiated and extended to 2024 end. As such projects takes minimum 30 months to execute, equipment ordering will be completed by 2021
- ♦ To assess the opportunity size and impact of the norms, we met **industry laterals** like (a) scientists at CPCB, (b) technical heads at large power utilities, and (c) CEOs and technical persons of equipment suppliers
- ♦ **Retrofit: Opportunity at ~USD 12 bn.** i.e. USD 3 bn p.a. from FY19 assuming ordering over 4-5 years. BHEL, the market leader (~55% market share in installed base), will get a lion's share of retrofit opportunity
- ♦ **New equipment:** Market to grow from USD 3 bn to 7 bn p.a.
 - **Increased volume:** Scrapping of old plants to increase BTG ordering to ~14 GW p.a. from 8 GW p.a. currently
 - **Improved realization:** BTG costs will increase by Rs 7 mn/MW to ~Rs 32 mn/MW due to additional equipment needed to build a new power plant

Market opportunity in wake of revised emission norms

	FY14-17	FY18	FY19	FY20
New equipment opportunity (GW)				
Re-powering scrapped plants		7	9	11
Greenfield / brownfield expansion		6	5	3
Total GW	8.4	13	14	14
Avg realization (Rs mn/MW)	25	32	32	32
New eqpt mkt (Rs bn)	211	420	439	445
New eqpt market (USD bn)	3	7	7	7
Retrofit opportunity (Rs bn)*				
FGD - existing plants		80	80	80
SCR - existing plants		-	11	11
FGD - under construction plants		19	79	79
SCR - under construction plants		8	35	35
Retro-fit market (Rs bn)		108	206	206
* assuming 5 years to comply rather than 2 yrs notified (Rs bn)				
Total market size (Rs bn)	211	527	645	651
Total market size (USD bn)	3	8	10	10

Source: Axis Capital

Scrapping of old plants

Government to scrap three-fourths of <500 MW old inefficient plants

- ♦ ~35 GW of ~51 GW of coal-fired power plants of unit size <500 MW installed before 2003 (largely >25 years old) will be scrapped given their alarmingly-high emission levels
- ♦ Government is keen to scrap old and inefficient plants
 - After 2011, state-owned entities were disallowed to enter into cost-plus PPAs but rather competitively bid for PPAs. Amendments to the tariff policy in January 2016 allow a state-owned entity to enter into cost-plus PPA for projects that are scrapped and rebuilt
 - Union government announced a new policy of pooling coal linkages in April 2016, which leaves it to state government to allocate its pooled quota of linkage on the basis of efficiency of power plants which includes private power plants as well. The share of the state in the pooled quota will not shrink in case it decides to scrap any inefficient plant
 - New policy of the coal ministry allows automatic transfer of coal linkage on replacement of an old thermal plant with a new super-critical plant. This is applicable to pre-NCDP (New Coal Distribution Policy) plants in public sector which have already been granted long-term linkages/ LoAs

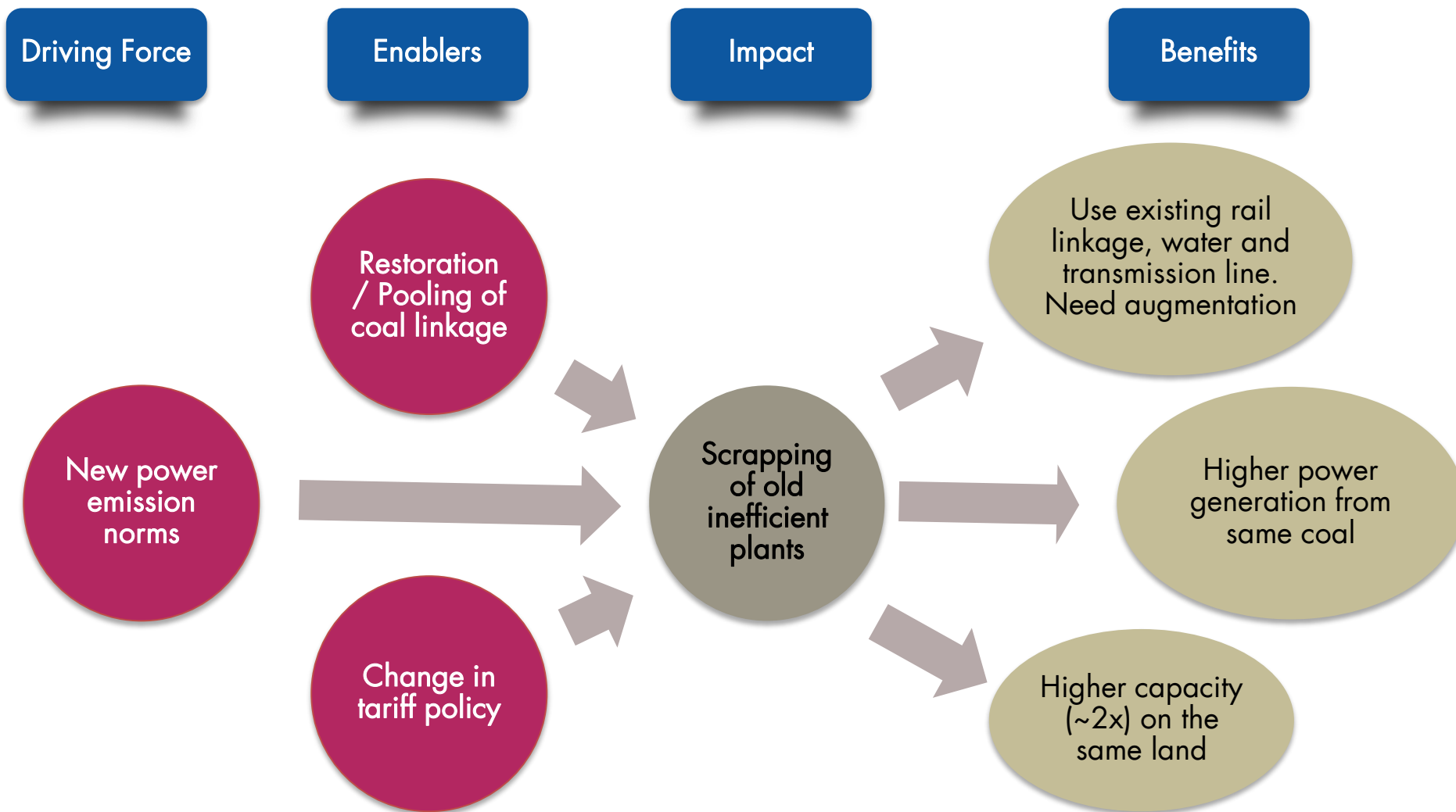
All India coal-based capacity bifurcated into < / > 500 MW unit size

Coal based capacity (GW)	Up to Dec-03		2004-16		2017 onwards (Under construction)
	<500 MW	>500 MW	<500 MW	>500 MW	
Central	13.3	10.0	5.4	22.6	24.6
State	33.4	3.5	9.6	18.9	18.7
Private	4.2	-	21.9	47.9	9.3
Total	51.0	13.5	36.9	89.4	52.6

Source: Central Electricity Authority, Axis Capital

~35 GW are
>25 years old and
likely to be scrapped

Connecting the dots on scrapping of old plants



Scrapping to create 2x capacity with lower hassles

- Central Electricity Authority (CEA)'s study on old inefficient plants (>25 year old) in 2015 brought out that ~15 GW plants were operating at PLF of >65% and another 5 GW plants were operating at PLF of 65-80%
- Of 33 GW power plants operated by central and state PSUs, CEA recommended scrapping of ~6 GW of power plants and replacing them with ~10 GW of super-critical units. It also recommended review of another ~5 GW of plants to check their viability for Renovation & Modernization (R&M) and Life Extension (LE)
- While ~24 GW plants can be operated for few years after R&M / LE, we expect, the recent policy changes (emission norms, tariff policy and coal linkage) will result in their scrapping in due course. Our channel checks suggest that these old plants are operating at alarmingly-high emission levels and need to be scrapped

Power plants identified for scrapping in CEA study

State	Plant	To be retired (MW)	Proposed replacement (MW)
Haryana	Panipat TPS	440	800
U.P.	Harduaganj	290	660
U.P.	Panki	210	660
U.P.	Obra	438	2x660
M.P.	Amarkantak	280	660
M.P.	Satpura	313	660
Maharashtra	Nasik	250	660
Maharashtra	Bhusawal Unit 2	63	660
Maharashtra	Paras Unit 2	63	660
Gujarat	Ukai	240	660
Telangana	Kothagudem & Ramagundem	783	800
Tamilnadu	Ennore	450	660
West Bengal	DPL	280	660
Central			
West Bengal	DVC Durgapur	350	660
Jharkhand	DVC Chandrapura	780	2x660
Total		5,228	10,180

Source: Central Electricity Authority, Axis Capital

Already ordered

Results of CEA study on old inefficient plants

(GW)	Old plants	To be retired	Further review	R & M/ Life extension	Proposed replacement
State	20.0	4.5	4.6	10.9	8.2
Center	12.8	1.6	-	11.2	2.0
Private	1.5	-	-	1.5	-
Total	34.3	6.1	4.6	23.6	10.2

Source: Central Electricity Authority, Axis Capital

Cost benefit analysis: Replacing old plants with super critical plants

Replacing old coal-fired power plants with super- critical plants scores on following counts:

- ♦ **Superior plant efficiency:** New super-critical plants with a better technology consumes ~30% lower coal vis-à-vis old inefficient plants
- ♦ **Efficient use of footprint:** Technological advancement and lower space requirement for super-critical plants mean ~2x capacity can be raised at the scrapped site
- ♦ **Existing infra can be put to use:** Further, most of the existing ancillary infrastructure (rail linkage, water and transmission line etc.) at the site can be augmented to handle the increased capacity

Cost of power generation: New vs. old depreciated plant

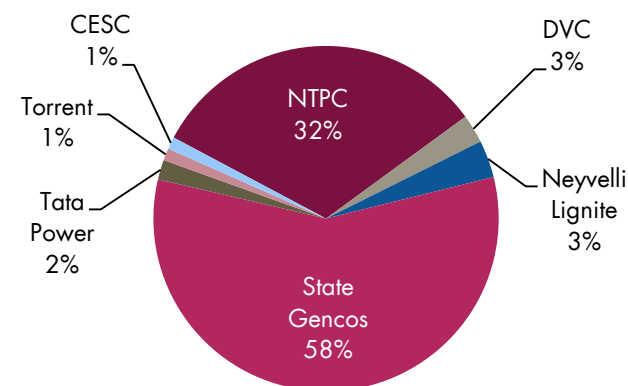
	Old Plant	Supercritical plant	Comments
Capital cost (Rs mn/MW)	25	70	Assuming 25 year old plant
PLF	56%	80%	
Units generated (mn kWh)	4,906	7,008	43% higher units of power
		43%	using same amount of coal
Aux power	11%	6%	
Station Heat Rate	3,000	2,100	
Coal GCV (kcal / kg)	3,500	3,500	
Coal consumed (mn tons)	4.2	4.2	Equal coal consumption
Coal consumption (kg/kWh)	0.9	0.6	Lower coal consumption/kWh
		-30%	
Price of coal (Rs/ton)	2,000	2,000	
Fuel cost (Rs/ kWh)	1.9	1.3	Lower fuel cost / kWh
		-34%	
Other costs (Rs / kWh)			
O&M costs	0.5	0.2	Lower O&M cost in SC plant
Depreciation	0.3	0.5	Higher depreciation
Interest cost	0.0	0.4	Higher interest cost
R&E (post tax)	0.3	0.5	Higher R&E required
Total fixed cost	1.1	1.6	Higher fixed costs
Total cost of generation	3.0	2.8	Total cost of generation is lower

Due to superior efficiency, cost of generation in new super critical plants is lower vis-à-vis old depreciated plants

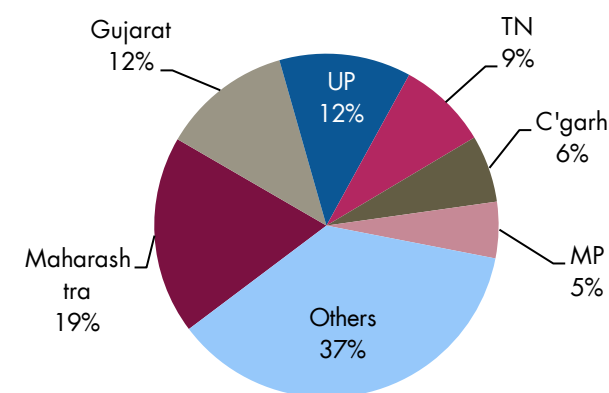
Contrary to perception, strong progress on scrapping old plants

- ♦ **NTPC constitutes a third of plants to be scrapped:**
Ministry of Power's recent press release states NTPC will scrap 11 GW of old plants and replace them with new ones with supercritical technology over next 5 years with investment of ~Rs 500 bn (note: timeline defined)
<http://pib.nic.in/newsite/PrintRelease.aspx?relid=155395>
 - Tenders underway for 5 GW at three locations to replace 1.8 GW
- ♦ **Strong progress by states on this front...**
 - UP has awarded projects at Obra, Panki and Harduaganj to replace old plants of 938 MW with new plants of 2,640 MW
 - AP awarded a 800MW project to BHEL at Dr. N.TATA plant for replacing the old 420 MW plant
 - Maharashtra declared BHEL as L1 for 660 MW Bhusaval plant for replacing the old 420 MW plant
- ♦ **Financially weaker SEBs of Jharkhand, Rajasthan, etc. are selling their old sites to cash-rich NTPC for it to expand at that location**
 - Jharkhand sold its old inefficient plant of 700 MW at Patratu to NTPC to replace it with a new plant
 - Rajasthan SEB has sold Chhabra power plant to NTPC which has an existing capacity of 1,000 MW and an under-construction capacity of 1,320 MW

35 GW of old plants, bulk with NTPC and states



Financially sound SEBs constitute 43% of state projects to be scrapped



Source: Central Electricity Authority, Axis Capital

Retrofit opportunity of USD12 bn

Retrofit opportunity of USD 12 bn over 4-5 years

- ♦ <500 MW unit size coal-fired power plants (~53 GW) will not have to incur any additional capex, as they largely meet the revised emission norms
- ♦ Existing plants of unit size = or >500 MW (102 GW) will have to install Flue Gas Desulphurization (FGD) to comply with SO_x cap. This entails capex of Rs 4.5 mn/MW. We expect central and state PSUs along with IPP with PPAs of ~89 GW to install FGDs. Further, we expect gencos like NTPC to play safe and opt for Selective Catalytic Convertors or SCR (cost of ~Rs 2 mn/MW) to bring NO_x level down in coal-fired power plants installed over 2004-16
- ♦ Power plants have to comply with the notified emission norms by December 2017. However, given the time required to implement the modifications and current financial health of SEBs and IPPs, **we expect ordering over next 4-5 years**
- ♦ All under-construction plants of ~53 GW (to be installed 2017 onwards) have to install both FGD and SCR to meet the revised emission norms. We expect ordering for these additional equipment over next 3 years. Overall, we anticipate market opportunity of ~Rs 800 bn (~USD 12 bn) for retrofitting existing/under-construction plants to meet new norms

All India coal-based capacity bifurcated into < / > 500 MW unit size

Coal based capacity (GW)	Up to Dec-03		2004-16		2017 onwards
Unit size	<500 MW	>500 MW	<500 MW	>500 MW	(Under construction)
Central	13.3	10.0	5.4	22.6	24.6
State	33.4	3.5	9.6	18.9	18.7
Private	4.2	-	21.9	47.9	9.3
Total	51.0	13.5	36.9	89.4	52.6

Source: Central Electricity Authority, Axis Capital

Retrofit opportunity in existing plants

Power producers' body oppose timelines to comply emission norms

- ♦ Association of Power Producers (APP) has opposed the revised emission norms for coal-fired plants on following counts:
 - **Aggressive time line** of two years to comply with the revised norms; **APP has asked for 5-10 years**
 - **Space constraints for some existing plants** to install FGD or SCR
 - **Higher power tariff**: Revised emission norms will inflate capital costs by Rs 12-15 mn/MW, pushing tariff up by Rs 0.5-1.5/kWh
 - Old plants with less than 10 years of residual life will find it difficult to pass on input cost inflation in PPAs
- ♦ We are **building in 4-5 years of ordering and 8 years of execution** considering financial constraints faced by private gencos and practical difficulties in meeting the norms within 2 years, as it takes around 1.5 years to install FGD

Key suppliers for retrofit opportunity

FGD		SCR	
Companies	Technology	Companies	Technology
L&T	MHPS	L&T	MHPS
BHEL	MHI	BHEL	in-house
Thermax	Marsulex	Thermax	Babcock and Wilcox
Alstom India	In-house	Alstom India	In-house
Andritz	In-house	Andritz	in-house
Ducon	In-house	Ducon	In-house
Doosan	In-house	Doosan	In-house

Source: Axis Capital

Retrofit opportunity with new emission norms

Retrofit opportunity (Rs bn)	GW	Capex (Rs mn/MW)	Opportunity (Rs bn)	Comments
Coal based capacity (upto Dec' 2016)	191			
Old capacity to be replaced	35			
Capacity under 500 MW	53	NIL		
FGD required in > 500 MW plants	89	4.5	402	FGD
SCR required in existing plants	28	2.0	56	SCR
Under construction				
Post 2017	53	6.5	342	FGD + SCR
Total opportunity			800	

Source: Axis Capital

Scenario analysis: ~USD 2 bn p.a. retrofit opportunity in worst case

- ♦ **Base case:** Among plants with unit size = or >500 MW installed up to 2016, central PSUs (33 GW), state PSUs (22 GW) and IPPs with PPAs (34 GW out of total 46 GW) install FGDs (to control SO_x emission). **Central PSUs install SCR to control NO_x emissions in all plants installed between 2004 and 2016.** All under-construction plants to be installed 2017 onwards (~53 GW) fit both FGD and SCR to meet the revised emission norms
- ♦ **Worst case:** Among plants with unit size = or >500 MW installed up to 2016, central PSUs (33GW), **state PSUs with sound financial health (15 GW out of total 22 GW) and IPPs with PPAs and sound financial health (13 GW out of total 46 GW)** install FGDs (to control SO_x emission). All under-construction plants to be installed 2017 onwards (~53 GW) install both FGD and SCR to meet the revised emission norms
- ♦ **Best case:** All existing plants with unit size = or >500 MW (~101 GW) install FGDs to control SO_x emission. All existing plants installed between 2004 and 2016 (~93 GW) install SCR to control NO_x emission. All under-construction plants to be installed 2017 onwards (~53 GW) fit both FGD and SCR to meet the revised emission norms

Scenario analysis of retrofit opportunity

Retrofit requirement (GW)	Worst case		Base case		Best case	
	SCR	FGD	SCR	FGD	SCR	FGD
Central	0	33	28	33	28	33
States	0	15	0	22	19	22
Private	0	13	0	34	46	46
Under construction	53	53	53	53	53	53
Total (in GW)	53	113	81	142	145	154
Capex (Rs mn/MW)	2.0	4.5	2.0	4.5	2.0	4.5
Capex (Rs bn)	105	509	161	638	291	691
Total capex (Rs bn)	615		799		982	
Years of ordering	5		4		4	
Market opp / year (Rs bn)	123		200		280	

Source: Axis Capital

Early signs of compliance with emission norms

- ♦ BHEL's management in Q4FY17 and Q1FY18 earnings call highlighted it is getting orders from customers of under-execution projects to change the layout design of boilers and expects to get additional orders for air pollution equipment to comply with the revised emission norms. The management believes it will get orders on a nomination basis under change in scope clause of its contracts. **BHEL has received order for Rs 7.5 bn in FY17 and expects further orders worth ~Rs 15 bn in FY18**
- ♦ Few developments on retrofitting existing plants with FGDs and SCRs to comply with new emission norms:
 - NTPC has issued a bulk tender for installation of FGDs at 22 GW of its existing locations
 - NTPC has issued pilot trial orders to install SCR at its existing plants. Trial orders placed to GE Power India, Thermax-Babcock & Wilcox, L&T-Mitsubishi, and BHEL
 - NTPC has invited tenders to install FGD for some of its under-construction plants. Note, FGDs would constitute ~2/3rd of USD 12 bn retrofitting capex
 - While we did not anticipate private players to join the fray, Reliance Power has invited tenders to install FGDs at its 5.8 GW of existing plants

NTPC announces committed schedule to comply with new norms

Committed to Comply with Environment Norms



Firm Action Plan to comply with New Environment Norms Finalized

FGD Plan-NTPC
159 Units
64.93 GW

No FGD Plan
25 units (15 NTPC+10 JV)
2.39 GW

No FGD Plan			
1	Badarpur-I	3x95	285
2	Badarpur-II	2x210	420
3	Tanda-I	4x110	440
4	TTPS-I	4x60	240
5	TTPS-II	2x110	220
6	Kanti	2X110	220
7	SAIL Durgapur	2X60	120
8	SAIL Rourkela	2X60	120
9	Patratu-I	2X110+2*105	325
Total		25 Units	2390

FGD being implemented/under tendering
9 Units (6 NTPC + 3 JV)
5.25 GW

FGD under implementation/Tendering			
1	Bongaigaon	3x250	750
2	VSTPP-V	1x500	500
3	Telangana	2x800	1600
4	Patratu	3x800	2400
Total		9 Units	5250 MW

▪ First FGD has been commissioned at Vindhyachal

FGD Plan
125 Units 57.29 GW

Under Construction Plants & Less than 5 Year old Plants
42 units
24.65GW
NIT issued/being issued

5 to 15 Year Old Plants
33 units
13.65 GW
NIT Proposed

More than 15 Year Old Plants
50 units
15.58 GW
To be decided after CERC Clearance

De Nox Action Plan:

In order to check the suitability of SCR technology for high ash and abrasive ash, SCR pilot test studies is being undertaken at NTPC running stations to check the suitability of SCR system for High ash Indian Coal and results of same are expected to come from Dec. 2017-June 2018. Planning/ strategies shall be decided after the SCR pilot test result.

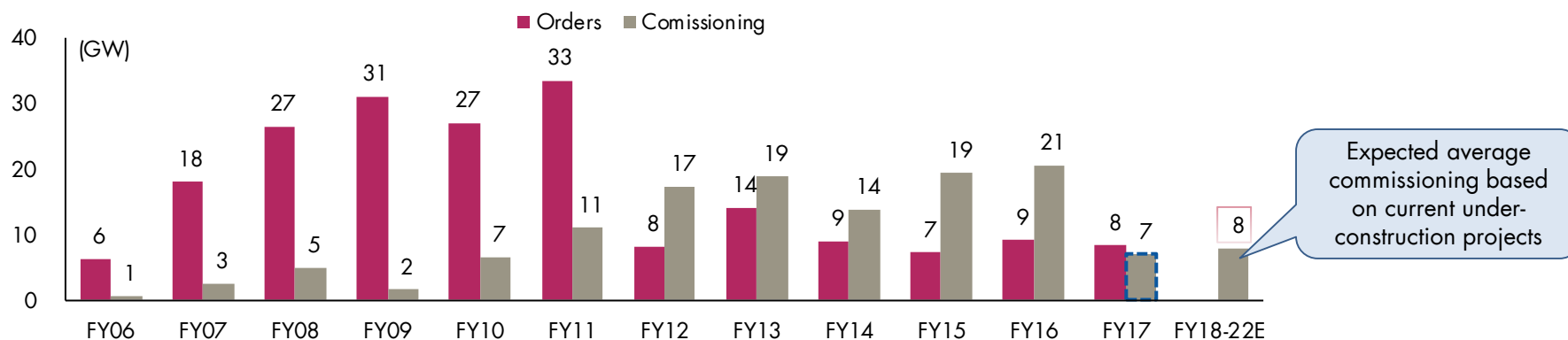
“Going Higher on Generation, lowering GHG Intensity”



Given current low PLFs, is there a need for new power plants?

- ♦ **Coal-fired power plants are running at low PLF of ~62%**. Of the 186 GW installed capacity, ~37 GW of plants (>25 years old) are running at PLF of ~55% and ~150 GW at PLF of ~65%. These old plants are inefficient as reflected in coal consumption 0.8-1 kg per unit of electricity vs. 0.5-0.6 kg by new plants. In case 35 GW of old plants are scrapped and their coal allocation is shifted to new efficient plants, then PLF of 150 GW will increase to ~80% (optimum level) and it would generate additional ~5% higher volume of power with same quantity of coal. **So, the question is – is there a need for new power plants?**
- ♦ **The answer is there is huge latent demand for power**, which is suppressed due to inability of SEBs to buy power given their poor financial health. Successful implementation of UDAY reforms would unleash strong growth in power demand. Strong double-digit demand growth will lead to nation-wide PLF moving up to optimum level of 75-80%
- ♦ **Sustained strong 7-8% power demand growth for next couple of years on revival of industrial demand coupled with scrapping of old inefficient plants would necessitate over 12 to 14 GW p.a. of fresh ordering for coal-based plants** even after considering 8-10 GW p.a. of addition from renewables

PLFs to improve as new capacity addition to fall from FY17 due to lower orders from FY12



Coal PLFs to rise to ~80%, long gestation period necessitates capex

	FY15	FY16	FY17	FY18E	FY19E	FY20E	FY21E	FY22E
Power Demand								
Power Demand (MU)	1,068,923	1,114,408	1,142,928	1,226,042	1,321,403	1,430,868	1,549,401	1,677,754
Growth %	6.7	4.3	2.6	7.3	7.8	8.3	8.3	8.3
Per capita demand (kWh)	833	858	869	922	981	1,050	1,124	1,202
Growth %	5.6	3.0	4.7	6.0	6.5	7.0	7.0	7.0
Elasticity to GDP growth	0.97	0.54	0.39	1.01	1.02	1.04	1.04	1.04
Surplus / Deficit	(3.60)	(1.93)	0.11	1.92	2.10	2.48	2.62	2.32
Power Supply								
Generation (MU)	1,097,635	1,163,081	1,217,200	1,329,869	1,435,918	1,560,983	1,692,665	1,827,316
Coal	796,052	858,655	890,943	1,000,995	1,087,447	1,197,227	1,310,964	1,428,771
Gas	40,988	46,694	49,094	39,939	39,939	39,940	39,941	39,943
Hydro	129,025	120,322	122,378	121,679	134,312	136,283	136,283	136,283
Renewables	58,607	65,780	81,868	88,112	98,361	111,671	126,629	140,487
Generation post Aux consumption	1,031,777	1,093,296	1,144,168	1,250,077	1,349,763	1,467,324	1,591,105	1,717,677
Installed Capacity								
Total Installed Capacity (MW)	264,111	301,966	326,847	342,794	355,196	369,061	383,215	395,844
Coal	151,165	179,313	185,803	195,093	198,995	202,975	207,034	211,175
De-commissioning of old plants*			(4,500)	(5,400)	(6,500)	(7,500)	(8,000)	(8,000)
Lignite	5,860	5,860	6,360	6,360	6,360	6,360	7,360	7,360
Gas	23,062	24,509	25,329	25,329	25,329	25,330	25,331	25,332
Hydro	41,267	42,783	48,858	50,358	51,858	51,858	51,858	51,858
Renewables	35,777	42,727	52,880	58,880	65,880	75,762	84,853	93,339
PLF %								
Coal	64	62	60	60	63	68	73	78
Renewables	19	19	20	18	18	18	18	18

Net addition to coal based capacities to slow down over FY18-22 due to low ordering over last 5 years and scrapping of old plants. Expect coal PLFs to rise to optimum level of 80% over 5 years despite rise in renewables capacity.

Renewable unlikely to dent coal

Renewables at grid parity on falling module tariffs and cost of capital

Cost structure of various sources of power in India

Mode	Fixed Cost/Kwh	Fuel Cost/Kwh	Fuel Cost/Kwh	PLF	Capital cost Rs mn/MW	Fuel cost assumption
Coal – domestic at pit head	1.6	1.5	3.1	PLF – 80%	70	Rs 2000/tonne, GCV of 4,000
Coal – domestic non pit	1.6	2.2	3.8	PLF – 80%	70	Rs 4,000/tonne, GCV of 4,000
Coal - imported	1.6	2.3	3.9	PLF – 80%	70	USD 60 FoB for GCV of 5,500
Hydro	4.0	-	4.0	PLF – 40%	100	-
Solar	2.9	-	2.9	PLF – 25%	40	-
Wind	3.7	-	3.7	PLF – 32%	65	-

Note: D:E has been assumed at 70:30

Falling solar tariffs not to dent demand for coal-fired power

- ♦ Falling solar tariffs will not dent demand for coal-fired power, as latter is still expensive when adjusted for incentives and India has base level shortages
- ♦ As per the Ministry of Power, average power outages in India is ~20 hours/ month and 50 mn rural homes have no electricity
- ♦ So, India still has base level shortages and renewables being infirm power can not meet the base load
- ♦ Further, harmonized solar tariffs are still higher than pit-head coal based plants. Solar bid at Rs 2.44 rises to Rs 3.74 when adjusted for incentives and transmission (see chart on right)

Solar bid adjusted for incentives and transmission



Source: Axis Capital

BHEL regains share on market consolidation

Power BTG manufacturing capacity

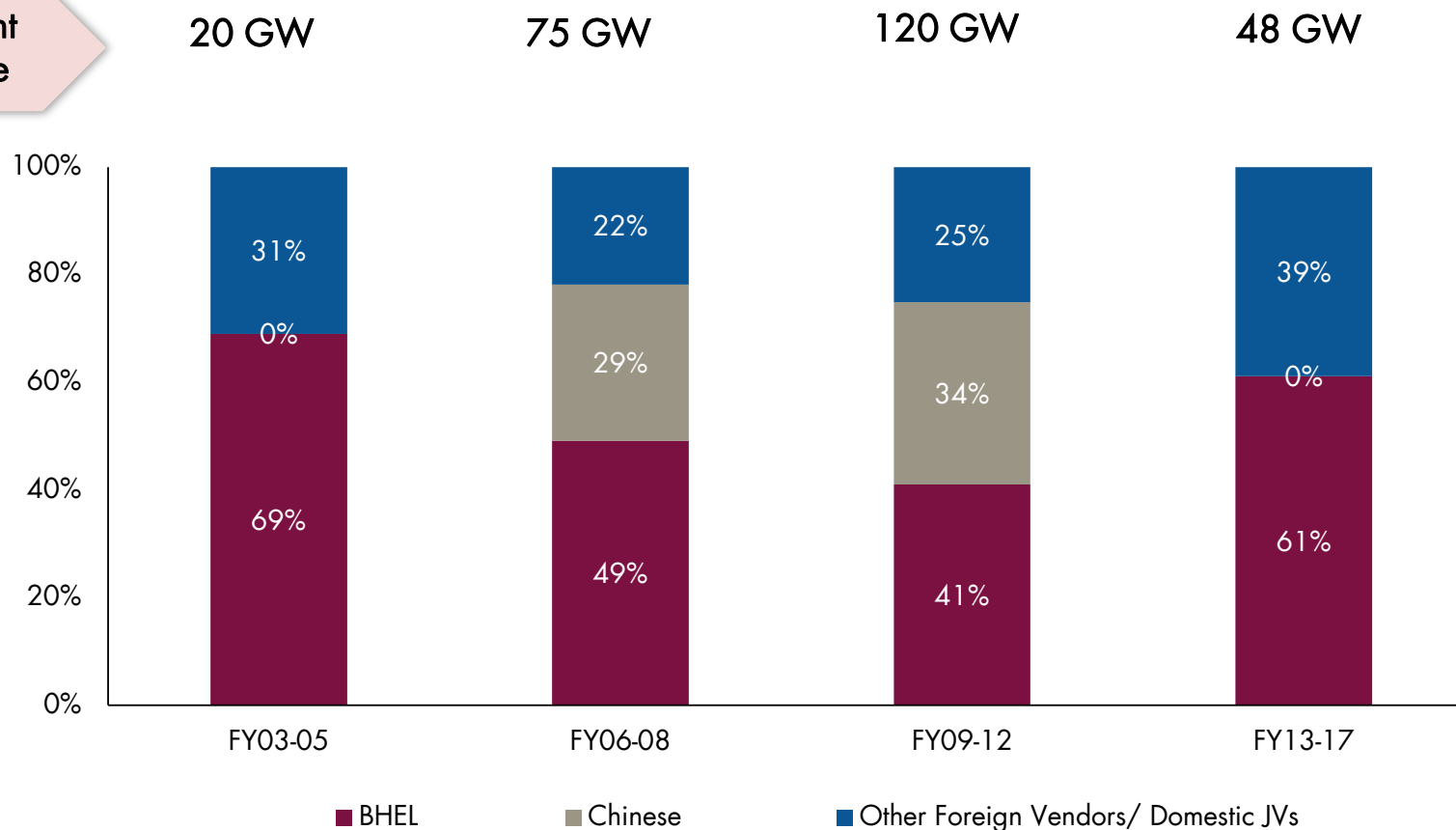
Domestic manufacturing capacity shrinking on exit of a few players

Company	Techology Partner	Reported by consensus		Actual supply in domestic		Comments
		Boiler	Turbine	Boiler	Turbine	
BHEL (Coal based)	Alstom	20,000	20,000	12,000	12,000	12 GW pa is coal, 3 GW pa is spares, 2 GW is hydro and 1 GW is Gas
L&T - MHPS	Mitsubishi-Hitachi	4,000	4,000	2,000	2,000	50-60% is for exports
Thermax	Babcock & Willcox	3,000	-	-	-	Mouthballed capacity, laid off employees
GE (erstwhile Alstom India)	GE (Alstom)	1,000	4,000	1,000	4,000	
Doosan Heavy	Doosan	2,000	-			Assembly unit at Chennai; Won 2 GW order in FY16 and 2.6 GW in FY17
ISGEC	Foster Wheeler	2,000		-	-	Now focusing on industrial boilers and exports
JSW-Toshiba	Toshiba		3,000	-	2,000	Focusing on exports
BGR-Hitachi	Hitachi	3,000	3,000	-	-	BGR didn not invest, Hitachi merged with Mitsubishi
Total Supply		35,000	34,000	15,000	20,000	
Total Supply @ 80% optimal utilization		28,000	27,200	12,000	16,000	
Total Annual Demand	30,000 MW pa in FY07-12			8,000 MW pa in FY13-17		

Source: Companies, Axis Capital

BHEL regains market share as Chinese, BGR, Thermax exit

Power plant
market size



Source: Companies, Axis Capital

BHEL: Industry division

Focus on bridging technology gaps

♦ Bridging technology gaps in Industry segment

- **T&D:** Introduced 400 kV GIS and 765 kV circuit breakers, which has now been type tested. Also, introduced 1,200 kV transformers. Won Rs 15 bn HVDC order with ABB
- **Captive power:** CFBC technology has now been stabilized
- **Transportation:** BHEL is working with Indian Railways for IGBT based propulsion equipment required in air-conditioned ACEMU and traction converter for DE locomotives
 - BHEL is also developing electric power train for electric vehicles/buses with an automobile partner
 - In parallel, BHEL has developed prototype hybrid (grid and/or solar PV based) wayside charging stations
 - Tied up with Kawasaki, Japan, for metro coaches
- **Defense:** BHEL has been nominated as the production agency for major gun systems for Indian Navy. The company is also being considered for production of marine gas turbine for naval applications

BHEL's industry division revenue mix

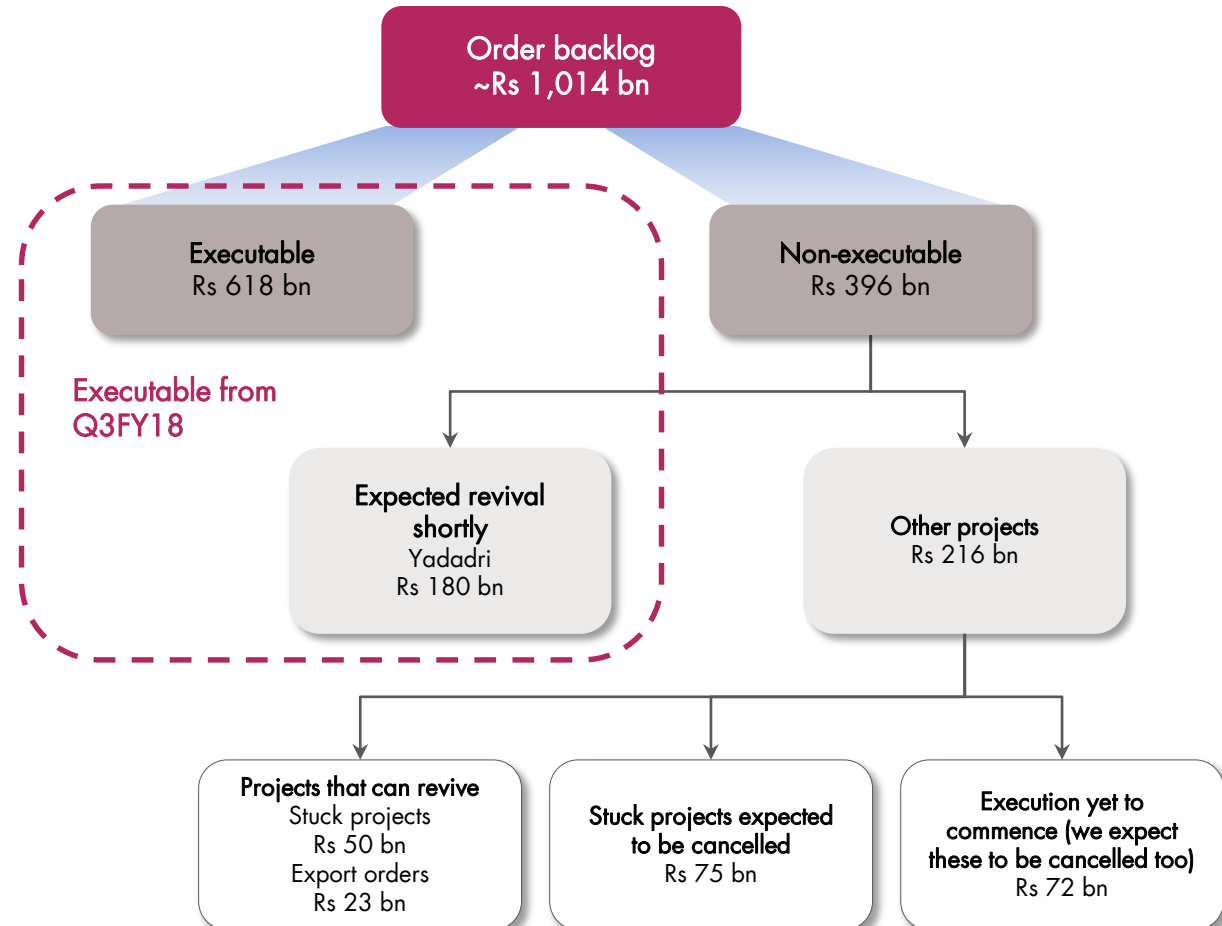
Rs mn	FY13	FY14	FY15	FY16	FY17
Power T&D	25,765	25,541	19,857	20,113	23,111
Captive power	17,032	15,320	14,090	12,004	13,221
Railways	13,515	10,034	6,786	7,671	7,987
Industrial products	36,265	32,400	21,435	19,967	20,393
Pumps and heaters	15,606	19,049	10,420	7,786	9,251
Industrial systems	11,641	10,248	8,058	8,169	8,169
AC motors	2,593	1,935	1,277	1,549	1,787
Compressors	6,425	1,168	1,681	2,464	1,187
Heat exchangers	2,591	4,080	3,925	2,367	937
Oil and Gas, Defense	2,448	5,134	4,299	1,775	1,246
Industrial revenues	106,040	78,525	69,635	58,718	60,456
as a % of total revenues	28%	27%	28%	21%	20%

Source: Company, Axis Capital

BHEL: Financials

Executable order book to improve from Q3

- ♦ **Executable order backlog to improve:**
Q1 order inflow at Rs 18 bn was down 50% YoY and order backlog at Rs 1,014 bn was down 6%. However, executable order backlog improved to Rs 618 bn (Rs 570 bn YoY; see chart)
- ♦ Yadadri project has got environmental clearance in Q1 and should become executable in Q2, which would increase executable order backlog further to ~Rs 800 bn
- ♦ Stuck projects which are expected to be cancelled – India Bulls Phase-2 ~Rs 60 bn and Avantha Phase-2 ~Rs 15 bn
- ♦ Projects where execution is yet to commence (we expect these projects to get cancelled too) –Edlapur (Karnataka Genco) ~Rs 36 bn; Visa-U 2 ~Rs 24 bn, Abhijeet-U-2 ~Rs 12 bn

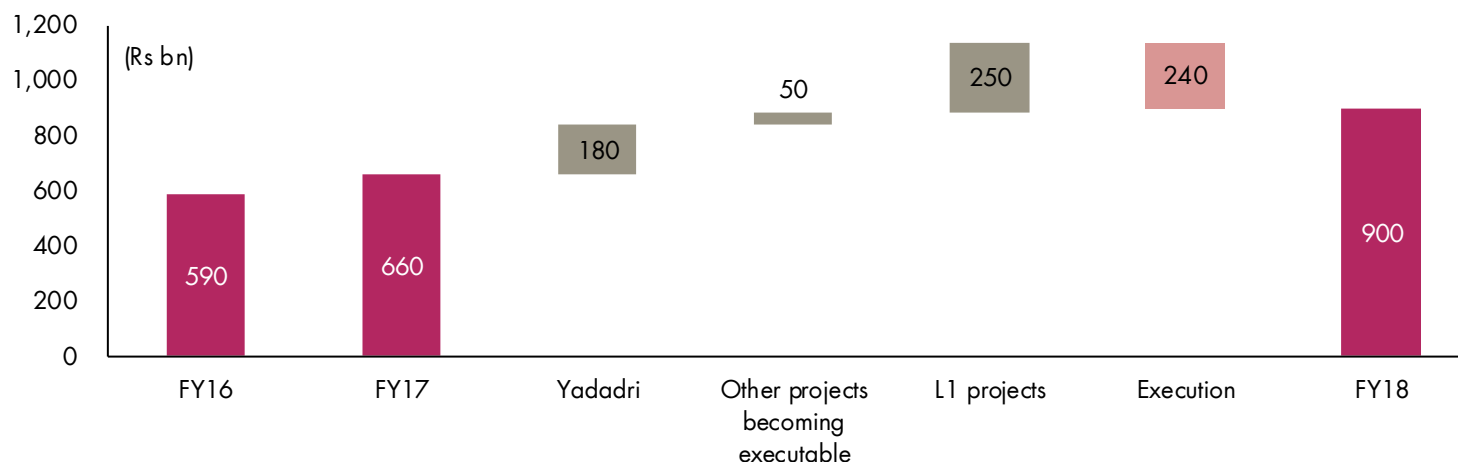


Source: Company, Axis Capital

Higher executable order backlog to improve execution in FY19

- ♦ **Order pipeline remains strong:** In the power segment, BHEL is L1 in ~5 GW (vs. ~2.6 GW in Mar'17) of orders worth ~Rs 250 bn. During Q1, BHEL was declared lowest bidder (L1) in NTPC's Patratu project of 2.4 GW. Further, it is participating in tenders worth ~3 GW. Assuming the conversion of L1 projects into firm orders, executable order backlog would increase 36% YoY at ~Rs 900 bn in Mar'18. Given the strong order pipeline and thrust on scrapping, the management expects overall power market order inflow at 10-12 GW p.a. In the industry segment, the medium term growth will be driven by T&D products, railways, solar and defense sectors
- ♦ **NTPC Patratu project (~Rs 120 bn) bidding not aggressive:** Management explained that BHEL's bid price for this project was based on (1) scope of the project; (2) land availability and condition of the site; (3) economies of scale as BHEL is currently executing similar order for 10 sets of 800 MW BTG units. We believe this order would be incrementally positive for earnings considering BHEL's large fixed overheads and low capacity utilization at <50%

Executable order backlog to improve



Source: Company, Axis Capital

Strong operating leverage

Financial metrics set to improve

(Rs bn)	FY15	FY16	FY17	FY18E	FY19E	FY21E
Order Inflow	308	437	235	417	528	574
Ex of non-moving	230	257	235	417	528	574
Order backlog	1,012	1,107	1,052	1,152	1,315	1,547
Ex of non-moving	600	590	660	900	1,063	1,295
Revenues (ex spares)	286	249	263	289	331	423
execution run-rate		42%	42%	37%	34%	34%
Spares	24	17	26	30	34	45
Gross revenues	309	266	288	319	365	469
Gross profit - Total	129	91	109	132	152	194
% margin	42%	34%	38%	41%	42%	41%
Variable cost	24	32	19	22	24	28
As a % of sales	8%	12%	7%	7%	7%	6%
Employee cost	55	55	57	65	67	69
Other fixed costs	26	20	22	25	27	32
Total fixed costs	81	76	79	90	94	101
As a % of sales	26%	29%	27%	28%	26%	22%
EBITDA	25	-17	11	20	34	65
% margin	8%	-6%	4%	6%	9%	14%

Source: Company, Axis Capital

Near-term upsides

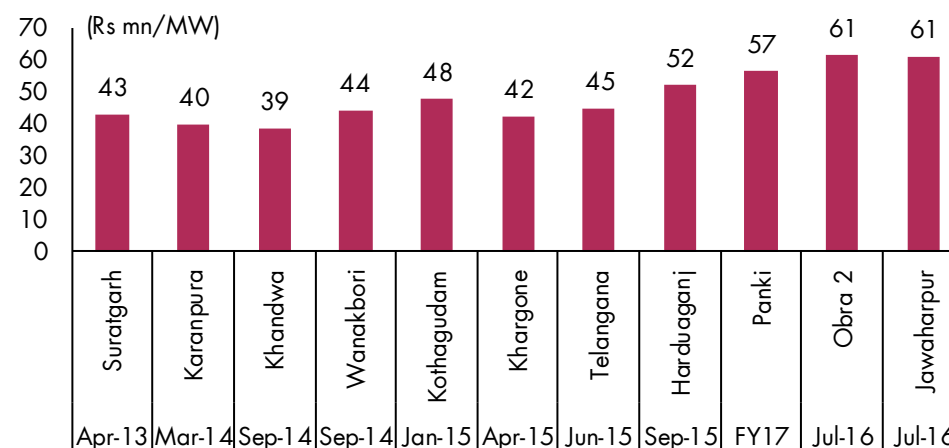
- ◆ **Decline in gross margin was due to reduced realization and increased Raw Materials (RM) costs**
 - Higher RM cost (~65% vs. ~55% earlier) was due to higher share of super-critical projects. Moreover, the share of projects with JDU clause in these projects was significantly higher, wherein BHEL sources 15-18% from its technology suppliers
 - Realization was hit by reduced demand for power equipment over past 4-5 years and increased competitive intensity, which is set to change with the revised emission norms
- ◆ **Margin expansion due to improved pricing** in order book and better mix in FY16/17 with <10% share of orders with JDU requirement from technology supplier i.e. Alstom vs. 60-80% of orders during FY13-14. Under JDU clause, BHEL has to outsource 12-15% of critical boiler parts to Alstom, which impacts its margin significantly. Additionally, share of EPC has declined to ~50% in FY16/FY17 from ~70% in FY15

Share of orders with JDU clause has declined

Year	Total order inflow (Rs bn)	EPC	Supercritical	of which JDU %
FY17	235	49%	43%	0%
FY16	437	41%	79%	10%
FY15	307	69%	49%	51%
FY14	280	0%	49%	100%
FY13	315	18%	56%	100%
FY12	221	0%	25%	33%
FY11	605	22%	36%	0%
Total	2,401	27%	50%	41%

Source: Company, Axis Capital

Pricing environment for EPC projects improving

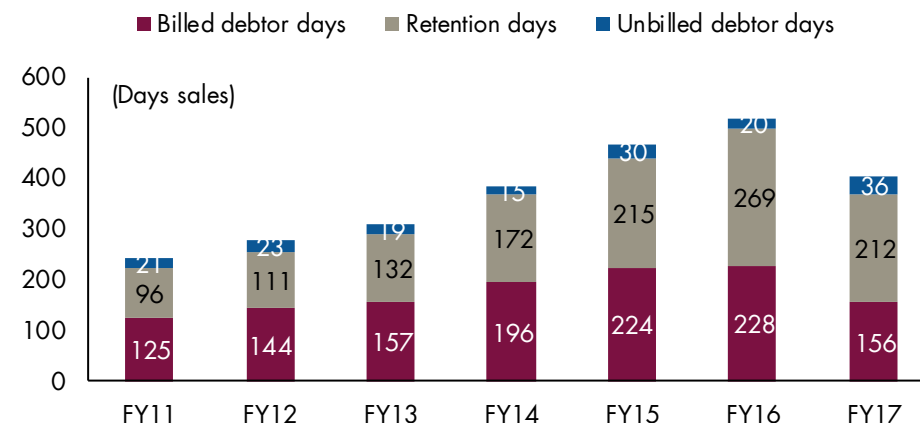


Source: Axis Capital

Debtors days to decline with normalization of retention days

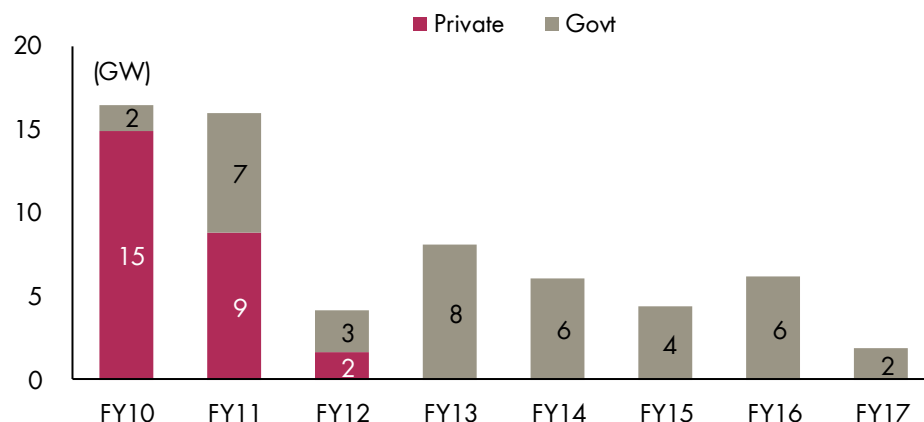
- Considering long execution cycle of 4-5 years, debtor days have long lead lag cycle
- While revenue halved over FY13-16, commissioning continued to be strong. Retention money (10% of order value) is released 1 year after commissioning
- We now expect commissioning to fall to 6 GW p.a. in line with past order inflows and consequently retention to decline

Unbilled debtor days to decline as PSU projects reach milestones

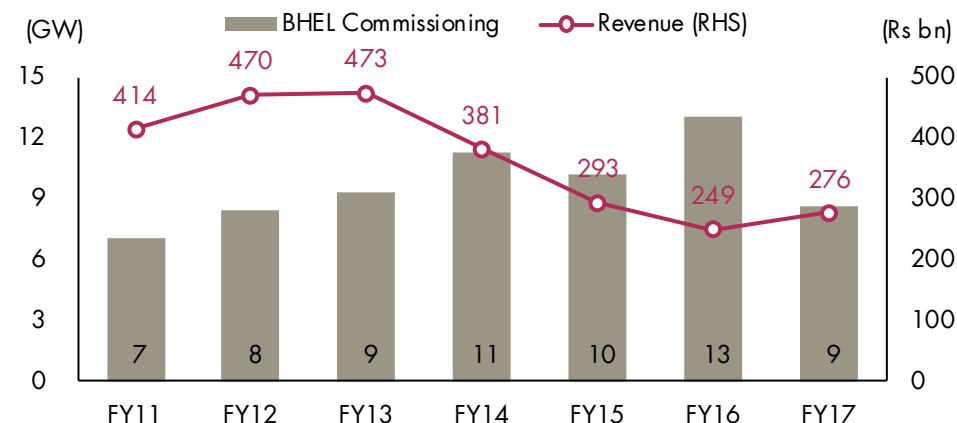


Source: Company, Axis Capital

Increase in retention days driven by higher commissioning



Source: Company, Axis Capital



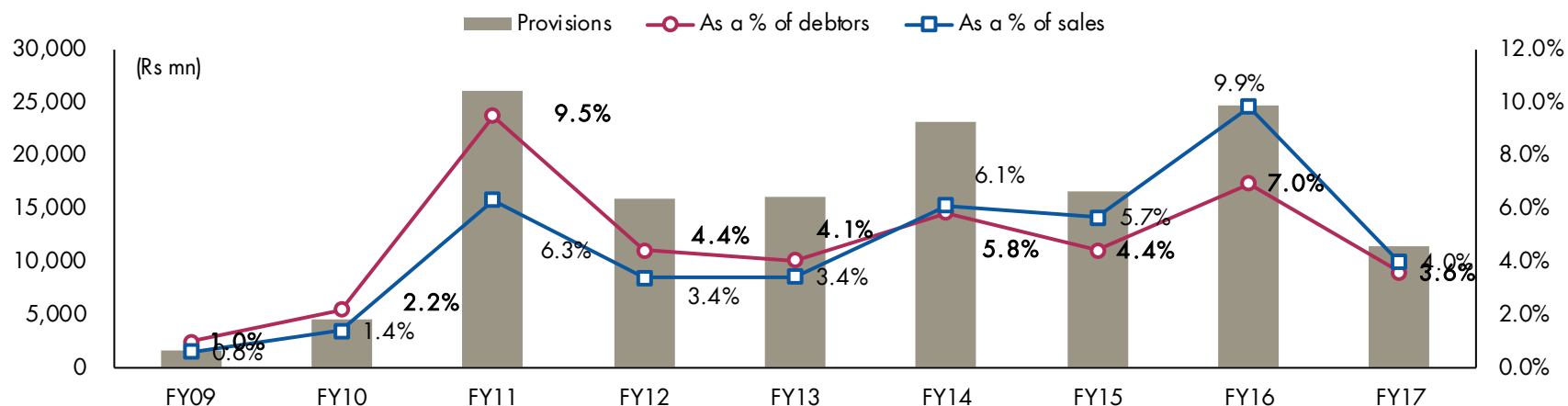
Source: Company, Axis Capital

Bharat Heavy Electricals

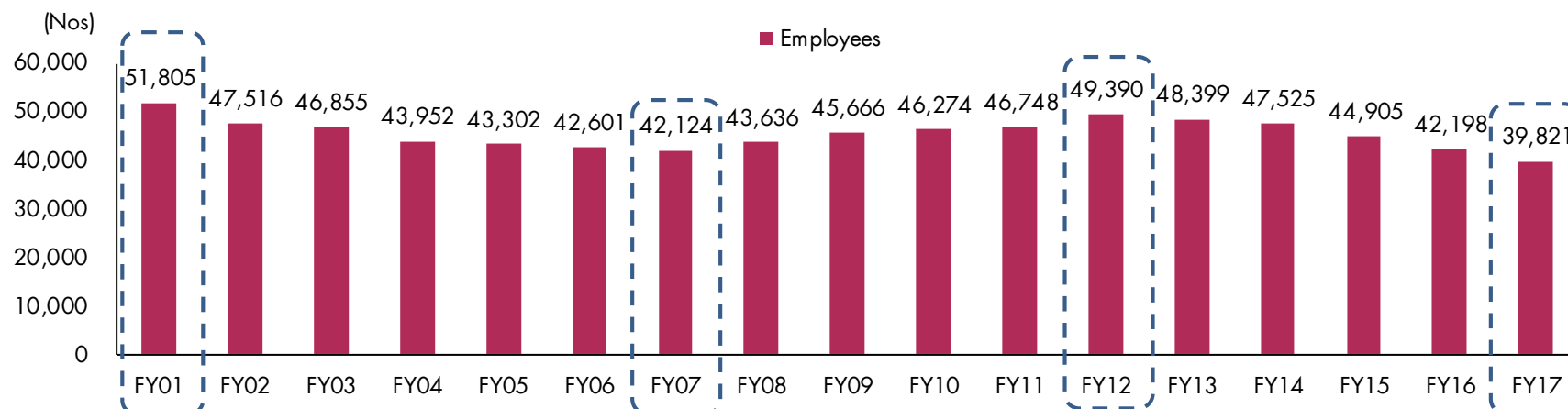
ENGINEERING

Conservative policy on provisions, employee reduction to lower costs

Conservative accounting policy on provisions



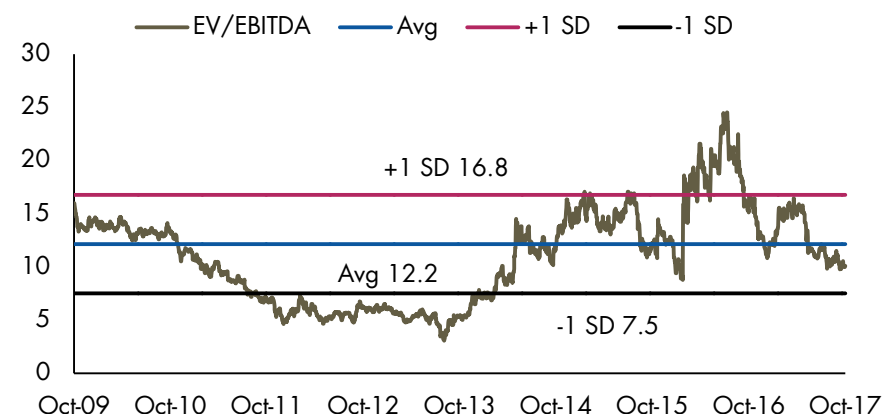
Similar to last cycle, BHEL has been reducing employee head count



Valuations

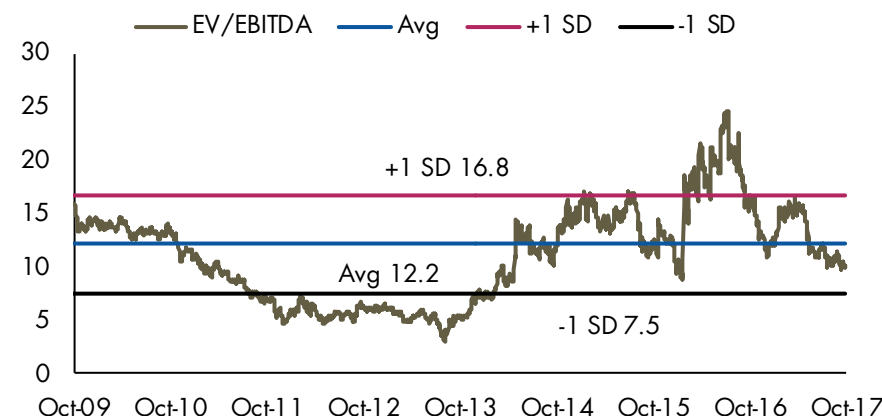
- ◆ Debtors days to decline with normalization of retention days: We expect BHEL's cash flows to improve on falling debtors days, resulting in net cash balance of ~Rs 200 bn or 70% of current market cap
- ◆ BHEL's stock is trading at EV of ~Rs 200 bn (Net cash = Rs 110 bn) equating to 8x FY18E EV/EBITDA (FY18e net cash = Rs 150 bn, EBITDA = Rs 20 bn) or 4x FY19E EV/EBITDA (FY19e net cash = Rs 200 bn, EBITDA = Rs 34 bn)
- ◆ We have **BUY** rating on BHEL with TP of Rs 131 (20x FY19E), which equates to exit multiple of ~9x FY19E EBITDA
- ◆ FY19 not peak earnings for BHEL. We expect earnings to post CAGR of ~35% after FY19 for next 2 years

Valuation inexpensive – 12m forward EV/EBITDA



Source: Axis Capital

12m forward Price/Earning



Source: Axis Capital

Valuations

- ♦ **Historical valuation:** BHEL has traded at average multiple of 19x P/E and 12x EV/EBITDA on 12m forward consensus estimates and 15x P/E and 10x EV/EBITDA on 2-yr forward consensus estimates over last ten years
- ♦ **Attractive DCF valuation:** Net present value of BHEL's 10-year cash flow provides 26% upside to the current enterprise value, while terminal value (at nil terminal growth rate) would add another 81% to the upside

Net present value of 10-year cash flows provides 26% upside, terminal value additional 81% upside

	FY18E	FY19E	FY20E	FY21E	FY22E	FY23E	FY24E	FY25E	FY26E	FY27E	Terminal Value
Revenues	304,824	349,329	404,500	447,721	470,107	493,612	518,293	544,207	571,418	599,989	
EBIT	9,454	25,455	43,591	56,298	61,727	67,549	73,792	80,482	87,648	95,321	
Tax	2,836	7,637	12,641	15,763	16,666	17,563	18,448	20,121	21,912	23,830	
D&A	8,438	8,729	8,331	8,771	8,947	9,126	9,308	9,494	9,684	9,878	
Changes in WC	41,270	25,127	15,066	(18,311)	(5,597)	(5,876)	(6,170)	(6,479)	(6,803)	(7,143)	
Capex	4,000	4,000	8,000	8,000	8,400	8,820	9,261	9,724	10,210	10,721	
FCFF	52,326	47,675	46,347	22,995	40,011	44,416	49,221	53,653	58,407	63,505	529,209
WACC	12%										Discount factor 0.32
NPV	262,978										NPV 170,391
Current EV	209,342										Current EV 209,342
Upside	26%									Additional upside	81%

Source: Axis Capital

Key risks

- ♦ **Higher-than-anticipated capacity addition in renewable:** We are currently building in capacity addition of ~10 GW p.a. from wind + solar power projects. Any significant higher additions in renewable space could hamper demand for new coal-based plants
- ♦ **Delay in implementation of power emission norms:** We expect ordering for retrofit equipment over the next 4-5 years and implementation over the next 7-8 years. Any further relaxation in implementation timeline can dilute upside accruing due to these emission norms
- ♦ **Relaxation in power emission norms:** The Association of Power Producers has opposed the revised emission norms for existing power plants citing cost escalation of power generation and space constraints. Any relaxation in emission norms would be negative
- ♦ **UDAY and revival of industrial demand:** Our investment thesis on revival of power sector also hinges on successful implementation of UDAY and revival of industrial demand, which would help in improving financial health of SEBs and private IPPs
- ♦ **CAG comments on operations:** Comptroller and Auditor General of India (CAG) has flagged some short comings related to completion of performance guarantee tests, bridging of technology gaps, and processes & systems. Implementation of CAG's recommendations would help improve operational performance and competitiveness

Key highlights from performance audit conducted by CAG

BHEL's turnover declined sharply after 2012-13 and profitability also turned negative for the first time in 2015-16. Keeping this in view, a performance audit on 'Competitiveness of BHEL in Emerging Markets' was carried out by Comptroller and Auditor General of India. Key highlights of the audit report are as follows:

- ♦ Orders secured by BHEL for execution of power projects provide for release of 5-10% of retention amount upon successful completion of Performance Guarantee (PG) tests and completion of pending works/ punch points. However, **BHEL has completed PG tests** of only 18 units up to Jul'16 (out of 52 units commissioned during 2011-16) after **considerable delays of seven to 50 months post commissioning**. PG tests in respect of the remaining 34 units were yet to be completed though two to 70 months had elapsed since their commissioning
- ♦ **BHEL could not bridge the technology gap in the core power sector**; in particular, Circulating Fluidized Bed Combustion, Gas Turbines, Dry Type Transformers and 500 MVA Inter Connecting Transformers. Further, BHEL could not avail of opportunities in 765 KV segment of Gas Insulated Substations. As R&D projects related to 400/ 420 kV technology were delayed, R&D for 765 kV technology could not be taken up
- ♦ Though BHEL had quoted below production cost in 13 cases, 11 of them were being executed with profit margin. This indicates that costing data used by the manufacturing units/ regional offices of BHEL for bidding was not reflective of the actual position and that the prices quoted by BHEL in case of lost tenders could have been further rationalized which in turn would have enhanced the competitiveness of BHEL
 - BHEL's success rate in securing turbine generator (TG) orders against competition revealed that BHEL's success rate declined from 80% in 2013-14 to 44% in 2014-15 and to 0% in 2015-16. BHEL could not secure any of the four tenders (involving TG component) finalized against competition during 2015-16
 - 'One BHEL' ERP system should be implemented expeditiously for processes and systems improvement and better coordination between units of BHEL

Annexure – emission norms

Stringent revised emission norms for coal-fired power plants...

- At COP21 in Paris (December 2015), India pledged to cut its carbon emission relative to its GDP in 2030 by 33-35% of 2005 level. Government seems earnest, as it has revised emission norms for coal power plants and automobiles, which contribute ~80% to India's pollution. MOEF notified **revised emission norms for coal power plants in Dec 2015 to be implemented by Dec 2017** (i.e. plants have to meet revised emission standards by Dec 2017)
- Revised emission norms mandate existing power plants to **cut their SO₂ and NO_x emission by 33-40% from current levels by Dec 2017** and **new plants to be installed 2017 onwards to have 67-80% lower emission of the gases**. It also mandates more efficient water consumption and cut in Particulate Matter (PM) emissions – but plants in large have already meet these emission norms

Change in environmental norms for coal-based power plants...impact on >500 MW plants

Parameter	Earlier	New norms		
		Up to 31-Dec-03	Between 1-Jan-04 to 31-Dec-16	From 1-Jan-17
Oxides of Nitrogen (NO _x)	No mandatory norms Manufacturers specify 510 to 750 mg/Nm³	600 mg/Nm ³	300 mg/Nm ³	100 mg/Nm ³
Sulphur Dioxide (SO ₂)	No mandatory norms Manufacturers specify 300 mg/Nm³	1) 600 mg/Nm ³ for units <500 MW, 2) 200 mg/Nm ³ for units >500 MW	1) 600 mg/Nm ³ for Units <500 MW, 2) 200 mg/Nm ³ for units >500 MW	100 mg/Nm ³
Mercury (Hg)	None	0.03 mg/Nm ³ (for units having capacity of 500MW and above)	0.03 mg/Nm ³	0.03 mg/Nm ³
Particulate Matter	150 mg/Nm ³ (for > 210 MW), 350 mg/Nm ³ (for < 210 MW)	100 mg/Nm ³	50 mg/Nm ³	30 mg/Nm ³
Water	None	<ul style="list-style-type: none"> Once Through Cooling (OTC) – Install Cooling Tower (CT) and achieve specific water consumption upto maximum of 3.5m³/MWh within a period of 2 years CT based plants – Achieve specific water consumption upto maximum of 3.5m³/MWh within a period of 2 years 		Meet specific water consumption upto maximum of 2.5 m ³ /MWh and achieve zero waste water discharged

Source: Government of India, Central Pollution Control Board, Axis Capital

...to push capex up for existing and new power plants...

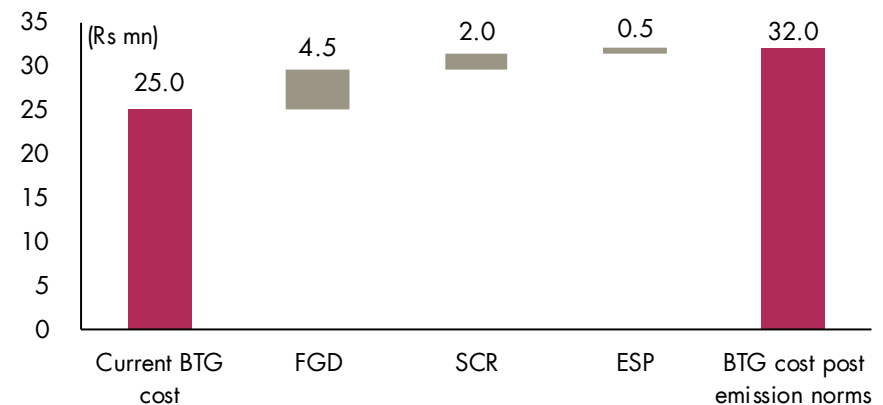
- ♦ Emission norms for <500 MW coal-fired power plants (88 GW) are lenient, and equipment suppliers largely meet these emission limits. However, ~35 GW of plants (largely >25 years old) need to be scrapped, as they have alarmingly-high levels of emission
- ♦ Stringent norms for >500 MW (102 GW) existing power plants (installed up to December 2016)
 - SOx emission level of 200 mg (vs. 300 mg currently) – would make installation of Flue Gas Desulfurization (FGD) unit necessary
 - NOx emission level of 300 mg (vs. ~500 mg currently) – would require minor modifications in boiler; no major capex
 - However, modifications in boiler will help plants just meet new NOx cap (~300 mg); hence, gencos, like NTPC, can opt for installing Selective Catalytic Reduction (SCR) to be future ready by bringing NOx level down to ~100 mg
- ♦ More stringent emission norms for plants commissioning 2017 onwards (53 GW) – would require such plants to install both SCR and FGD to comply with emission limits

Changes required to meet new emission norms

Parameter	Equipment	Comments
Oxides of Nitrogen (NOx)	Selective Catalytic Reduction (SCR)	Most existing plants can lower emission to 300 mg from 500 mg through modification in burner
Sulphur Dioxide (SOx)	Flue Gas Desulfurization (FGD)	Plants with unit size >500 MW (~80 GW) will have to install FGD
Particulate Matter	Electrostatic Precipitator (ESP)	Minimal capex, as only the size of existing ESP will have to be enhanced
Mercury (Hg)	None	Installation of FGD, SCR, and ESP is expected to bring mercury levels down within the norms
Water	Limited data available on existing usage of water at plants; hence, capex requirement is not known. However, if plants are asked to use sewage water, it will require installation of tertiary treatment plants	

Source: Axis Capital

Increase in equipment cost (Rs mn) to meet new norms



Source: Axis Capital

New BTG equipment market to double to USD 8 bn p.a.

- ♦ We expect the scrapped coal-fired power plants (~35 GW) to come up with ~50% higher capacity over next 4-5 years. Moreover, ~10 GW of power plant orders in CY15 will have to be re-tendered to comply with the revised emission norms. This will result in new capacity of 60 GW in next 4-5 years in addition to existing pipeline of ~20 GW. Hence, volumes would rise to ~15 GW p.a. from 8-10 GW p.a. currently
- ♦ All new power plants will have to install both FGD and SCR to meet the revised emission norms, which will increase BTG cost to ~Rs 32 mn/MW (vs. ~Rs 25 mn/MW now)
- ♦ Rise in volumes coupled with rising realization will double the BTG market size to ~Rs 470 bn p.a. (~USD 7 bn p.a.)

Market opportunity in wake of revised emission norms

	FY14-17	FY18	FY19	FY20
New equipment opportunity (GW)				
Re-powering scrapped plants		7	9	11
Greenfield / brownfield expansion		6	5	3
Total GW	8.4	13	14	14
Avg realization (Rs mn/MW)	25	32	32	32
New eqpt mkt (Rs bn)	211	420	439	445
New eqpt market (USD bn)	3	7	7	7
Retrofit opportunity (Rs bn)*				
FGD - existing plants		80	80	80
SCR - existing plants		-	11	11
FGD - under construction plants		19	79	79
SCR - under construction plants		8	35	35
Retro-fit market (Rs bn)		108	206	206
* assuming 5 years to comply rather than 2 yrs notified (Rs bn)				
Total market size (Rs bn)	211	527	645	651
Total market size (USD bn)	3	8	10	10

Source: Axis Capital

Company financials (Standalone)

Profit & loss (Rs mn)

Y/E March	FY16	FY17	FY18E	FY19E
Net sales	249,408	275,876	304,824	349,329
Other operating income	7,828	9,169	10,086	11,095
Total operating income	257,235	285,046	314,910	360,424
Cost of goods sold	(168,754)	(177,809)	(185,539)	(211,517)
Gross profit	88,482	107,237	129,372	148,907
<i>Gross margin (%)</i>	<i>35.5</i>	<i>38.9</i>	<i>42.4</i>	<i>42.6</i>
Total operating expenses	(105,160)	(96,102)	(109,682)	(114,723)
EBITDA	(16,678)	11,136	19,689	34,184
<i>EBITDA margin (%)</i>	<i>(6.7)</i>	<i>4.0</i>	<i>6.5</i>	<i>9.8</i>
Depreciation	(9,356)	(8,488)	(8,438)	(8,729)
EBIT	(26,034)	2,647	11,251	25,455
Net interest	(268)	(3,506)	(3,506)	(3,506)
Other income	8,031	7,137	10,340	12,340
Profit before tax	(18,272)	6,278	18,085	34,289
Total taxation	5,633	(1,320)	(5,425)	(10,287)
<i>Tax rate (%)</i>	<i>30.8</i>	<i>21.0</i>	<i>30.0</i>	<i>30.0</i>
Profit after tax	(12,639)	4,959	12,659	24,002
Minorities	-	-	-	-
Profit/ Loss associate co(s)	-	-	-	-
Adjusted net profit	(12,639)	4,959	12,659	24,002
<i>Adj. PAT margin (%)</i>	<i>(5.1)</i>	<i>1.8</i>	<i>4.2</i>	<i>6.9</i>
Net non-recurring items	3,505	-	-	-
Reported net profit	(9,134)	4,959	12,659	24,002

Source: Company, Axis Capital

Balance sheet (Rs mn)

Y/E March	FY16	FY17	FY18E	FY19E
Paid-up capital	4,895	4,895	4,895	4,895
Reserves & surplus	294,290	318,049	317,822	324,642
Net worth	299,185	322,944	322,717	329,537
Borrowing	1,263	896	896	896
Other non-current liabilities	-	-	-	-
Total liabilities	300,448	323,840	323,613	330,433
Gross fixed assets	132,980	137,795	143,478	147,478
Less: Depreciation	(93,348)	(101,836)	(110,274)	(119,003)
Net fixed assets	39,632	35,959	33,204	28,475
Add: Capital WIP	3,154	1,683	-	-
Total fixed assets	42,786	37,642	33,204	28,475
Total Investment	6,634	6,614	6,614	6,614
Inventory	96,374	73,724	83,513	95,707
Debtors	356,031	318,633	296,964	280,374
Cash & bank	100,860	104,918	148,449	187,075
Loans & advances	31,648	51,485	54,284	62,209
Current liabilities	335,105	288,462	320,295	353,948
Net current assets	251,029	279,584	283,794	295,343
Other non-current assets	-	-	-	-
Total assets	300,448	323,840	323,613	330,433

Bharat Heavy Electricals

ENGINEERING

Company financials (Standalone)

Cash flow (Rs mn)

Y/E March	FY16	FY17	FY18E	FY19E
Profit before tax	(18,272)	6,278	18,085	34,289
Depreciation & Amortisation	9,356	8,488	8,438	8,729
Chg in working capital	20,193	(24,497)	39,321	27,077
Cash flow from operations	20,684	(7,544)	63,924	63,314
Capital expenditure	(5,067)	(3,345)	(4,000)	(4,000)
Cash flow from investing	(7,793)	(6,831)	(7,506)	(7,506)
Equity raised/ (repaid)	(0)	0	-	-
Debt raised/ (repaid)	653	(367)	-	-
Dividend paid	(7,343)	(11,014)	(11,014)	(14,686)
Cash flow from financing	(7,522)	(12,629)	(12,262)	(15,934)
Net chg in cash	5,369	(27,005)	44,156	39,874

Valuation ratios

Y/E March	FY16	FY17	FY18E	FY19E
PE (x)	(24.6)	62.8	24.6	13.0
EV/ EBITDA (x)	(12.7)	18.6	8.3	3.7
EV/ Net sales (x)	0.8	0.8	0.5	0.4
PB (x)	1.0	1.0	1.0	0.9
Dividend yield (%)	2.4	3.5	3.5	4.7
Free cash flow yield (%)	0.1	(0.0)	0.2	0.2

Source: Company, Axis Capital

Key ratios

Y/E March	FY16	FY17	FY18E	FY19E
OPERATIONAL				
FDEPS (Rs)	(3.4)	1.4	3.4	6.5
CEPS (Rs)	0.1	3.7	5.7	8.9
DPS (Rs)	2.0	3.0	3.0	4.0
Dividend payout ratio (%)	(80.4)	222.1	87.0	61.2
GROWTH				
Net sales (%)	(14.9)	10.6	10.5	14.6
EBITDA (%)	(167.5)	(166.8)	76.8	73.6
Adj net profit (%)	(188.4)	(139.2)	155.3	89.6
FDEPS (%)	(188.4)	(139.2)	155.3	89.6
PERFORMANCE				
RoE (%)	(4.1)	1.6	3.9	7.4
RoCE (%)	(5.8)	3.1	6.7	11.6
EFFICIENCY				
Asset turnover (x)	1.2	1.3	1.5	2.2
Sales/ total assets (x)	0.4	0.4	0.5	0.5
Working capital/ sales (x)	0.6	0.6	0.5	0.3
Receivable days	521.0	421.6	355.6	293.0
Inventory days	128.4	98.2	103.3	107.1
Payable days	294.1	261.9	282.3	293.1
FINANCIAL STABILITY				
Total debt/ equity (x)	0.0	0.0	0.0	0.0
Net debt/ equity (x)	(0.3)	(0.3)	(0.5)	(0.6)
Current ratio (x)	1.7	2.0	1.9	1.8
Interest cover (x)	(97.1)	0.8	3.2	7.3

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