

Challenger Energy

Company update

South Africa backdrop still supportive for shale gas

Oil & gas

Challenger Energy (CEL) is making progress towards the award of exploration permits with the submission of the updated environmental management programme (EMPr) in late February. If the legislative framework is in place by this northern hemisphere summer, CEL could potentially be awarded a licence and commence its work programme in Q315, with corehole drilling starting 12-18 months later. Meanwhile, the power crisis in South Africa is getting worse, highlighting the need for new energy sources including gas. CEL remains in farm-out discussions. A licence award and farm-out could lead to a near-term re-rating, with longer-term upside based on drilling success.

Year end	Revenue (A\$m)	EBITDA (A\$m)	PBT* (A\$m)	Operating cash flow (A\$m)	Net cash/(debt) (A\$m)	Capex (A\$m)
06/13	0.1	(7.6)	(7.6)	(0.6)	0.3	(0.3)
06/14	0.1	(1.2)	(1.2)	(1.1)	0.8	(0.2)
06/15e	0.1	(1.2)	(1.2)	(1.1)	0.8	(0.1)
06/16e	0.1	(1.1)	(1.2)	(1.2)	(7.1)	(6.7)

Note: *PBT is normalised, excluding intangible amortisation and exceptional items.

Another step towards licence awards

In late February, Challenger submitted its updated environmental management programme (EMPr) after extensive stakeholder consultation. As per the regulator's request, CEL's work programme now excludes hydraulic fracturing, allowing it to proceed with initial exploration before technical regulations are finalised. CEL plans to reprocess seismic data, build a geological model and drill up to three coreholes. The regulator has until end June 2015 to approve the EMPr; and if the MPRDA bill is approved by then, exploration licences could potentially be granted soon after. Shell's well-publicised 'pull-back' from South Africa could be a tactical move to put pressure on the government to accelerate the legislative and licensing process.

S Africa power crisis worsens; rising need for gas

Regular 'load shedding' by Eskom is hurting South Africa's economy to the tune of 0.5-1.8% of GDP per month, depending on the blackouts' severity. The country does not have easy or cheap options to solve its near-term power crisis, as gas imports from neighbouring Mozambique would require an expensive new pipeline and LNG imports would be technically difficult. If shale exploration is successful, indigenous gas supply could help meet the country's dire need for more power. Current commodity price fluctuations have little impact on newbuild power economics, which continue to favour gas over coal or diesel in the long term.

Valuation: Appraisal and farm-outs to create value

CEL's valuation of A\$13/acre (down from A\$25/acre in Dec 14) equates to pre-feasibility acreage pricing in Australian farm-outs; however CEL is arguably more advanced given the original well success. This leaves significant upside potential given partial de-risking from one well and CEL's strategic value as the only Karoo shale pure-play. The key near-term catalysts are a licence award and farm-out. A follow-on farm-out would likely attract much higher valuations (A\$250-1,000/acre).

28 April 2015

Price **A\$0.04**

Market cap **A\$15m**

A\$1.28/US\$

Net cash (A\$m) at 31 December 2014 1.3

Shares in issue 350.6m

Free float 60%

Code CEL

Primary exchange ASX

Secondary exchange N/A

Share price performance



% 1m 3m 12m

Abs (2.2) (17.0) (51.1)

Rel (local) (3.3) (23.2) (54.7)

52-week high/low A\$0.10 A\$0.04

Business description

Challenger Energy is an ASX-listed E&P with a 95% interest in an application for an exploration permit in the Karoo basin, South Africa, which is prospective for shale gas. It is awaiting award of a permit to commence exploration.

Next events

Exploration permit award Q315

Farm-out 2015/16

Geological studies start H215

Corehole drilling starts H216

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Investment summary

In this note, we provide an update on key developments in the South Africa shale story and Challenger Energy since our initiation report [Emerging South Africa shale story](#), 28 October 2014, and follow-up note [Cash injection helps while licence application progresses](#), 1 December 2014.

Successful environmental consultation process

On 27 February 2015, Challenger's South African subsidiary Bundu submitted its updated Environmental Management Programme (EMPr) to the regulator, Petroleum Agency South Africa (PASA). This was an important step towards approval of an exploration permit.

By way of background, Bundu applied for a c 1m acre exploration right in May 2010 and submitted its environmental management programme in October 2010. Its application was not processed due to the moratorium on licensing and exploration from April 2011 to September 2012. In late October 2014, Bundu was notified by PASA that the application evaluation process would resume, and was asked to submit an updated management programme and consult with concerned stakeholders by the 27 February 2015 deadline.

Updated technical regulations covering the drilling and hydraulic fracturing of unconventional resources have yet to be finalised and approved. PASA has asked companies including Bundu to remove references to hydraulic fracturing from their applications so they can be processed while the technical regulations are finalised. Importantly, this could allow companies like Challenger to proceed with the initial geological evaluation and core drilling of shale gas resources in the event hydraulic fracturing regulations take longer than expected to be approved.

Initial exploration programme no longer includes hydraulic fracturing

In accordance with PASA's request, the scope of Challenger's proposed work programme has been altered to remove fracturing. As a reminder, Challenger initially planned to reprocess existing 2D seismic data shot in the 1960s and 1970s and acquire two coreholes, then drill one vertical well (possibly near the original CR 1/68 well), fracture it in three stages and run a production test.

Challenger's updated work programme is largely unchanged with respect to the first two phases.

- **Phase 1** comprises desktop and field studies focused on building a hydrogeological (groundwater) model and studying existing core samples.
- **Phase 2** consists of a detailed analysis of seismic data and construction of a subsurface model, with a view to choosing optimal well locations.

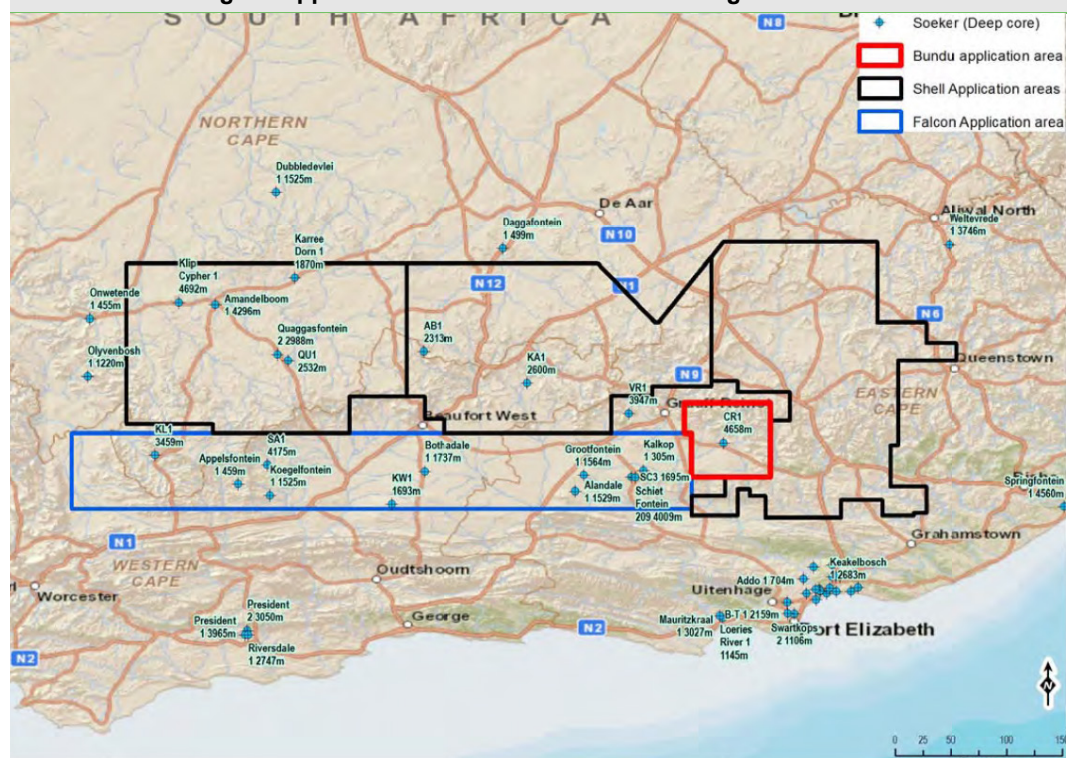
Each of these two phases is expected to take approximately six to nine months. In the event existing seismic data is not sufficient to build a detailed geological model, Challenger may decide to gather new seismic data.

- **Phase 3**, scheduled to start 12-18 months after a permit award, now involves "up to three" coreholes to gather fresh geological samples, logging and testing of the coreholes, but no hydraulic fracturing. The coreholes should target both Upper and Lower Ecca shales, down to a maximum total depth of c 3,800-4,000m. In its May 2013 World Shale Gas report, the US EIA considered the Lower Ecca shales to be more prospective due to a higher total organic content (TOC), however the Cranemere 1/68 well drilled in 1968 by state company Soekor flowed gas naturally to the surface from the Upper Ecca. The coreholes are expected to be drilled in around two months if cores are only extracted from the deepest part of the borehole, while full coring from surface would take one extra month.

The key objectives of the conventional corehole drilling and logging in Phase 3 include:

1. assessing the characteristics of the target shale layer(s), notably organic content, porosity and permeability;
2. mapping out the reservoirs and any discontinuities in the stratigraphy; and
3. testing of the target intervals through a full logging suite. If the wells flow naturally to the surface (as in the CR 1/68 well which required activation of the blow-out preventer and a mud kill job), a flow test would also be conducted. Challenger plans to use an appropriately equipped rig including a blow-out preventer to deal with this eventuality. If the wells only find gas shows but do not flow naturally, no hydraulic fracturing and thus no flow test would be conducted.

Exhibit 1: Challenger's application area and location of existing boreholes



Source: Environmental Management Programme report (February 2015)

Potentially lower exploration costs: If Challenger's EMPr is approved in late June and the company secures exploration rights in July or August 2015, it could potentially drill its first corehole in the second half of 2016 after spending 12-18 months on geological studies. We stress that this is only an indicative timeline that assumes no further delays from here. If the US onshore rig market remains soft, Challenger may be able to secure a rig and associated equipment at a lower cost than initially anticipated. We had previously estimated the work programme cost at c A\$20-25m, including c A\$15m to drill, frack and test one well, and A\$5-10m for seismic reprocessing and corehole drilling and analysis. We see some downside to this cost estimate as the updated work plan does not include hydraulic fracturing and could potentially benefit from lower rig rates.

Main stakeholder concerns successfully addressed

According to Golder Associates (the consulting firm which managed Bundu's and Shell's EMPr applications), only Phase 3 (corehole drilling and logging) is deemed to have a potential material interaction with the environment. During the public consultation period which lasted from December 2014 to February 2015, Bundu was asked to address a range of concerns from stakeholders, including:

- the impact on physical environment – groundwater and surface water, waste handling (cuttings and drilling muds), and air quality;

- the impact on biological environment – extent of land clearing, impact on biodiversity, fauna and flora; and
- the impact on social and economic environment – local job creation prospects, potential of increased migration into the area, and disruption to farming practises.

Given the limited scope of the initial work programme, the conventional borehole drilling programme is expected to have a minimal impact on the environment according to Golder Associates. In particular, the long-term impact on groundwater (a key concern from stakeholders), is not expected to be material as boreholes will be cased to protect aquifers.

As the EMPr application did not include hydraulic fracturing, Golder Associates did not express an opinion on the impact of hydraulic fracturing on the environment in its report, nor was the topic addressed in detail during stakeholder consultations.

Status of legislation and regulation

- **EMPr could be approved by end June:** The regulator has 120 days to approve the updated EMPr, or until the end of June 2015. Exploration permits could potentially be awarded not long thereafter (eg July or August) if other relevant legislation was in place by that stage.
- **Technical regulations no longer on critical path:** As previously mentioned, updated technical regulations are no longer required for Challenger to proceed with initial geological studies and conventional exploration drilling, since its work programme does not include hydraulic fracturing. The technical regulations were last published in October 2013 for public consultation.
- **MPRDA still outstanding:** The key outstanding piece of legislation is the Mineral and Petroleum Resources Development Amendment (MPRDA bill). The November 2013 version of the MPRDA bill was widely criticised by energy companies as it would have given the state a 20% free carry in all projects and the ability to buy part or all of the remaining 80% share at an agreed price. Last year, the mineral resources minister expressed concern about the negative impact of the proposed fiscal terms on oil and gas investment in the country, and advised President Zuma not to sign off on the bill. In January 2015, President Zuma sent the updated bill back to the National Assembly on constitutional grounds. Although there is positive momentum, it is not yet clear when the final MPRDA bill will be approved, and how the proposed 20% free carry provision will be changed. Based on the industry's negative reaction, the 20% free stake provision could potentially be altered so that the carry kicks in only after the oil and gas companies have recovered their initial exploration and development costs. It is possible that the bill may be split in two separate bills, addressing mining and oil and gas.

South Africa's power crisis deepens

After a respite since the high-profile 2007-08 blackouts, the power crisis in South Africa started to worsen again in 2014 and into 2015. State-owned electricity company Eskom, which produces 95% of the country's electricity, plans to continue to implement rolling blackouts (referred to as 'load shedding') during the upcoming southern hemisphere winter, when electricity demand is seasonally high. Due to rising power demand and the tightness of the system, Eskom has resorted to delaying maintenance on its power plants in the past few years. This has led to reduced reliability and rising unplanned downtime, sometimes exceeding planned outages. Meanwhile, Eskom's two coal plants under construction, Kusile and Medupi, are experiencing continued delays, and are now expected to be fully online in 2019-20.

To cope with the immediate crisis, Eskom is spending around ZAR1bn (c \$83m) a month on emergency diesel supplies. It has requested a 16% annual electricity price hike, twice the 8% tariff increases granted by the regulator, with the final outcome possibly somewhere in between. The

government has proposed converting Eskom's diesel-fuelled open-cycle turbines to gas, which raises the question of where gas supplies will come from. Gas imports from neighbouring Mozambique would likely require the construction of an additional import pipeline into South Africa at an estimated cost of \$6bn. Eskom is also working with Sasol on possible plans to build a floating LNG regasification terminal and import LNG from the US or the Middle East; however metocean conditions are considered to be too rough for a floating terminal.

South Africa's chronic electricity shortage has a significant impact on its economy, notably on the mining sector. The monthly cost of blackouts has been estimated by the ministry of public enterprises at ZAR20-80bn (\$1.7-6.6bn) depending on their severity, equivalent to 0.5-1.8% of the country's GDP. The World Bank estimates that power shortages will restrict South Africa's forecasted GDP growth to just 2% in 2015.

As discussed in our October 2014 initiation report, newbuild power economics favour natural gas over coal or diesel in the long run, while leaving sufficient headroom for upstream producers to earn a return on investment. The government's 2013 Integrated Resource Plan (IRP) calculates that break-even gas prices (ie coal-gas price parity) for baseload generation could be in a range of \$6-8/mcf assuming long-term domestic thermal coal prices of \$30/ton (the IRP's base case) to \$60/ton in an upside case scenario. Domestic coal supplied to Eskom is currently cheap at c \$20/ton (equivalent to \$5.3/mcf in gas-parity terms) compared to export prices of \$63/ton (equivalent to \$8.2/mcf), however domestic coal prices are likely to rise towards export-price parity over time as Eskom's supply contracts roll off.

What Shell's withdrawal from South Africa shale could actually mean

In mid-March 2015, Shell announced it was putting its South Africa shale gas exploration programme on hold and pulling its shale gas head out of South Africa. The company is still seeking an exploration licence. The main reasons given by Shell for its move included (i) falling global oil and gas prices, and (ii) the need for greater clarity on legislation and technical regulations before deciding on its next steps.

The supermajor's announcement was seen by some commentators as a setback for the country's shale gas prospects; however we would be wary of drawing overly negative conclusions. Beyond the headlines, we suspect Shell's announcement may have been motivated by other factors.

1. Firstly, Shell may have chosen not to update its environmental management programme dating back to April 2011 given the sheer size of its licence application, preferring to wait for full technical regulations on hydraulic fracturing to be in place. For reference, Shell's licence application of 95,000 km² is roughly 23 times bigger than Challenger's c 4,200 km² licence application and over three times larger than Falcon/Chevron's, who were the only other applicants besides Challenger to submit an updated EMP.
2. Secondly, it may have been a tactical move by Shell to try and put pressure on the South African government, which would be helpful to its smaller competitors.
3. Lastly, Shell is reducing global exploration spend notably on shale opportunities outside of North America, so South Africa is unlikely to be the sole casualty of spend-reduction efforts.

Shell has made it clear it would regard South Africa shale as competitive compared to other shale assets, if the right regulatory and legislative framework is put in place. Shell's South Africa chairman was quoted as saying: "Should attractive commercial terms be put in place, the Karoo project could compete favourably within Shell's global tight/shale gas and oil portfolio" ([Business Day](#), 15 March 2015).

In our opinion, the implications of Shell's move on the broader timeline of South Africa shale exploration are limited, and its withdrawal may not delay the actual timing of drilling in the Karoo.

We understand that because it applied for a Technical Cooperation Permit (TCP), Shell has already had access to the existing 2D seismic data and undertaken preliminary geological modelling. As such, it has a head-start over Challenger. Once it receives a permit award, Shell may be in a position to drill its exploration wells broadly around the same time as Challenger.

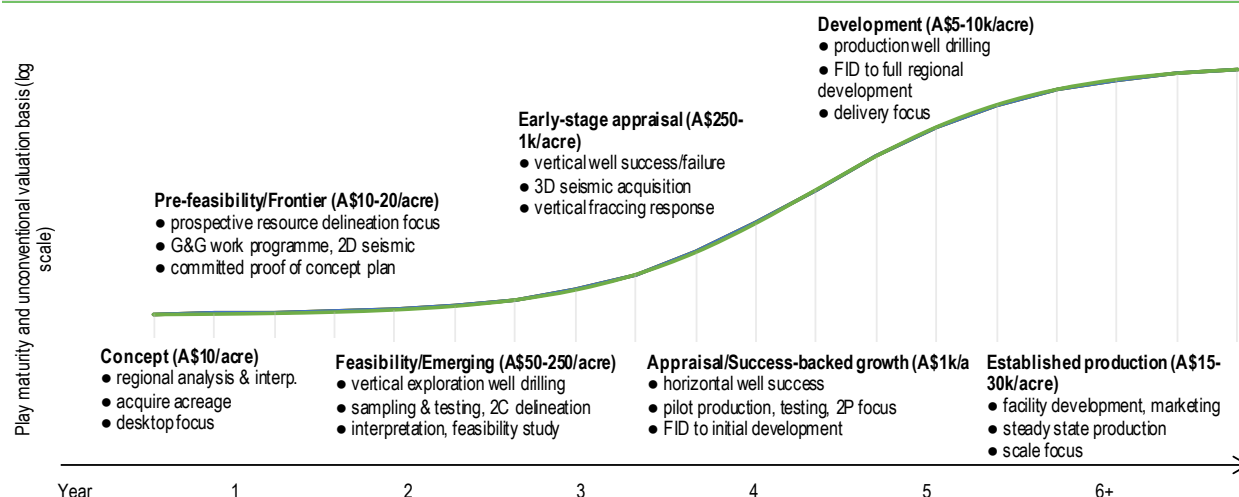
Valuation

Challenger offers strategic and scarcity value as the only pure-play E&P in South Africa shale with a high (95%) working interest. In comparison with Falcon/Chevron's or Shell's acreage, it is arguably a lower-risk play due to the presence of the CR 1/68 gas discovery well in its block.

Challenger trades at an implied EV valuation of c A\$13/acre, equivalent to farm-out deal valuations featured in frontier shale basins in Australia (A\$10-50/acre). CEL's implied EV is down from A\$25/acre in our 1 December update note. Like many of its small-cap E&P peers, Challenger has suffered from the downturn in the oil price and poor sentiment towards small-cap explorers. Equity markets are normally willing to ascribe far less value to deal-backed assets than acquirers (as much as 5-6 times less), which points to a significant re-rating opportunity as and when a farm-in deal does take place.

A farm-out deal at a premium to the current implied A\$13/acre valuation would be value-accretive for Challenger. In its half-year 2014 report dated 12 March 2015, the company states that it remains in farm-out discussions. We believe there are good reasons to be confident that exploration rights will be awarded and that attractive farm-out terms will be reached. Such a transaction could also potentially be structured as a multi-stage farm-out, with work programmes contingent on performance milestones.

Exhibit 2: Representative unconventional play/player maturation S-curve



Source: Edison Investment Research

Financials

Our model now reflects CEL's reporting as of end-December 2014, but is otherwise broadly unchanged. Challenger held A\$1.3m in cash as of end-December 2014, after raising A\$1.2m through a private placement with existing shareholders on 25 November 2014. Challenger appears to be fully funded for ongoing activities (G&A) through to year-end 2015, given a historical G&A run-rate of A\$1.3m spent in the calendar year 2014. In the event small equity top-ups are needed, the



company has demonstrated its ability to raise equity in the last few years, most recently in November 2014.

Beyond this, Challenger will need a well-funded joint venture partner to cover exploration and appraisal expenses once it receives a permit award. Strategically, we believe it may be in Challenger's interest to raise equity before a deal to partly fund the first exploration programme, as it would retain a much higher working interest post-farm-out. Minimising dilution in the early stages would allow it to benefit more from a bigger value uplift in a second farm-out.

A larger equity issue may be easier to execute after a permit award and farm-out deal as Challenger's share price would presumably be higher then, and could allow the company to minimise dilution in a second-stage farm-out.

Exhibit 3: Financial summary

	\$000s	2013	2014	2015e	2016e	2017e
Year end 30 June		IFRS	IFRS	IFRS	IFRS	IFRS
PROFIT & LOSS						
Revenue		89	114	87	90	90
Cost of Sales		0	0	0	0	0
Gross Profit		89	114	87	90	90
EBITDA		(7,567)	(1,242)	(1,234)	(1,112)	(1,112)
Operating Profit (before amort. and except.)		(7,570)	(1,243)	(1,234)	(1,112)	(1,112)
Intangible Amortisation		0	0	0	0	0
Exceptionals		0	0	0	0	0
Other		0	0	0	0	0
Operating Profit		(7,570)	(1,243)	(1,234)	(1,112)	(1,112)
Net Interest		4	(4)	(3)	(78)	(636)
Profit Before Tax (norm)		(7,566)	(1,247)	(1,237)	(1,190)	(1,747)
Profit Before Tax (FRS 3)		(7,566)	(1,247)	(1,237)	(1,190)	(1,747)
Tax		0	0	0	0	0
Profit After Tax (norm)		(8,544)	(1,695)	(1,006)	(1,190)	(1,747)
Profit After Tax (FRS 3)		(7,566)	(1,247)	(1,237)	(1,190)	(1,747)
Average Number of Shares Outstanding (m)		311.5	329.5	350.6	350.6	350.6
EPS - normalised (c)		(2.8)	(0.5)	(0.3)	(0.3)	(0.5)
EPS - normalised and fully diluted (c)		(2.4)	(0.4)	(5.7)	(6.8)	(10.0)
EPS - (IFRS) (c)		(2.4)	(0.4)	(0.4)	(0.3)	(0.5)
Dividend per share (c)		0.0	0.0	0.0	0.0	0.0
Gross Margin (%)		100.0	100.0	100.0	100.0	100.0
EBITDA Margin (%)		N/A	N/A	N/A	N/A	N/A
Operating Margin (before GW and except.) (%)		N/A	N/A	N/A	N/A	N/A
BALANCE SHEET						
Fixed Assets		4,870	4,604	4,964	11,614	18,264
Intangible Assets		0	0	0	0	0
Tangible Assets		4,870	4,604	4,964	11,614	18,264
Investments		0	0	0	0	0
Current Assets		394	865	861	104	104
Stocks		30	31	31	31	31
Debtors		82	74	73	73	73
Cash		282	761	756	0	0
Other		0	0	0	0	0
Current Liabilities		(217)	(184)	(272)	(272)	(272)
Creditors		(217)	(184)	(272)	(272)	(272)
Short term borrowings		0	0	0	0	0
Long Term Liabilities		(9)	(9)	0	(7,084)	(15,481)
Long term borrowings		0	0	0	(7,084)	(15,481)
Other long term liabilities		(9)	(9)	0	0	0
Net Assets		5,037	5,276	5,552	4,363	2,615
CASH FLOW						
Operating Cash Flow		(616)	(1,085)	(1,059)	(1,190)	(1,747)
Net Interest		0	0	0	0	0
Tax		0	0	0	0	0
Capex		(333)	(156)	(87)	(6,650)	(6,650)
Acquisitions/disposals		537	0	0	0	0
Equity Financing		180	1,721	1,137	0	0
Dividends		0	0	0	0	0
Net Cash Flow		(233)	480	(9)	(7,840)	(8,397)
Opening net debt/(cash)		(515)	(282)	(761)	(756)	7,084
HP finance leases initiated		0	0	0	0	0
Other		(0)	(1)	4	0	0
Closing net debt/(cash)		(282)	(761)	(756)	7,084	15,481

Source: Company data, Edison Investment Research

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