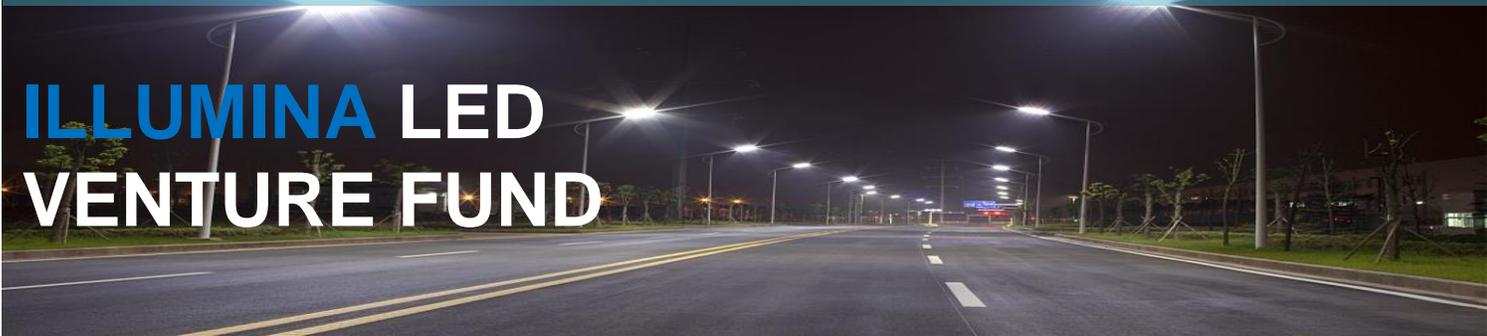


# BRINGING EFFICIENT LIGHTING TO COMMUNITIES...ONE LAMP AT A TIME



## ILLUMINA LED VENTURE FUND

### The Dilemma:

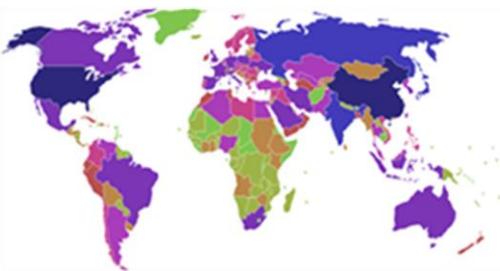
#### Efficiency at a sky high price

Every night, municipalities around the world illuminate roads using high pressure sodium (HPS) lamps. These account for 95% of street lighting in the US<sup>1</sup>. However, HPS lamps are energy consuming and have high maintenance costs. In an era of rising energy prices, HPS lamp usage will lead to increasing costs for municipalities whilst contributing to global warming. Thanks to advances in technology, a compelling lighting alternative that is more efficient has been developed<sup>2</sup>: Light Emitting Diode (LED) lighting. A light-emitting diode (LED) is a semiconductor device that produces light from electricity. The most common light emitting diode is blue. LEDs are long-lasting and efficient - most of the energy produces light, not heat. These lights consume 67% less energy than their HPS peers. Replacing just 100 HPS lamps by LED lightings can lead to a decrease of 125 tons of carbon dioxide being emitted each year<sup>3</sup>. That is more than the emissions produced by 3 households combined annually<sup>4</sup>.

Unfortunately, the high price of LED lamps prevents this technology from being widely adopted. One may cost up to 10 times more than a comparable HPS lamp. Municipalities are barred by this cost factor and lack the financial resources to obtain LED lamps despite the clear social and economic benefits they would offer.

In face of this reality, how can we make LED lamps accessible to municipalities while providing attractive returns to willing investors?

**Figure 1:** US is among the countries with the largest carbon dioxide emissions (blue)<sup>5</sup>



\*\*IRR Assumptions:

Phase 1: 1 mil lamps replaced using equity, Phase 2: 2 mil lamps replaced using equity and leverage. IRR assumes a 10 hour period of operation daily with energy savings rate of 67%, a WACC of 10% and a project life of 10 years. 60-40 split with municipality.

### FUND PROFILE\*

**Asset Class:** Infrastructure Fund

Equity	Bond
<b>Target Size:</b> USD 250,000,000	<b>Target Size:</b> USD 280,000,000
<b>Minimum Investment for Individuals:</b> USD 500,000	<b>Minimum Investment for Individuals:</b> USD 500,000
<b>Minimum Investment for Institutions:</b> USD 2,500,000	<b>Minimum Investment for Institutions:</b> USD 2,500,000
<b>Term:</b> 10-year, closed-end fund	<b>Term:</b> 10-year amortized bond with par 1,000 USD secured by cash flow from EMC contract
<b>Target IRR:</b> 40%**	<b>Coupon:</b> S&P Municipal Bond Investment Grade Intermediate Index yield +150bp
<b>Fees:</b> 2% Management fee, 20% carried interest	
<b>*Conditions subject to change</b>	

### Our Solution: Financial innovation

Illumina LED Venture Fund aims to catalyze the LED revolution in municipalities by covering all of the costs and expenses of replacing existing HPS street lamps with LED lamps. In return for this investment, the fund will secure a 10-year Energy Management Contract (EMC) with each municipality. The EMC is an agreement stipulating that the fund will receive a share, in the form of a set percentage, of the energy savings and carbon credits sold over a set period of time. The amount of expected energy savings will also be specified in the agreement.

While municipalities could install LED lighting by raising funds through Energy Conservation bonds, they would still face a large initial cash outflow for the installation, large debt burden and interest payments as well as the equipment maintenance expenditures.

**Figure 2:** The EMC Model in a nutshell



\*Electricity cost savings in watts \*running electricity cost\*operating time

Illumina therefore provides an attractive solution to municipalities wishing to reduce their carbon dioxide emissions and power cost, allowing them to benefit from electricity savings without the upfront expenses, maintenance costs and interest typically associated with LED replacement programs. Our model could eventually be scaled to other countries as well as industrial and commercial businesses.

## Fund Structure:

Our two tiered fund offers investment opportunities for investors of various risk appetites. The equity investment portion is for more aggressive investors while the bond investment portion is for income-oriented investors. For both options, the duration of the investment is 10 years. Our fund works as follows:

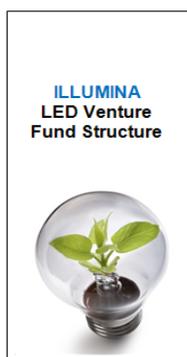
- ❖ Illumina LED Venture Fund will sign 10 year- EMCs with municipalities.
- ❖ The first phase of the installation will be entirely financed by equity. We then proceed with the procurement and installation of the LED lamps.
- ❖ The remaining phases will be financed through cash flow securitization:
  - Illumina LED Venture Fund will sponsor a L2 Special Purpose Entity (L2).
  - L2 will raise capital from issuing amortized bonds to income-oriented investors in order to purchase a portion of the EMC cash flows from the first phase.
  - Note: Since our EMC cash flows are backed by the municipalities and our Special Purpose Entity has credit enhancements, we expect L2's credit rating to be slightly higher than the municipal bond's rating.
- ❖ Over the course of the EMC contract, Illumina will collect the savings from the municipalities on a biannual basis.

## Risk factors

Risk Factors	Issue	Our solution
Default Risk	Non-payment from municipalities	In addition to our credit enhancements, our contracts are only with municipalities that have investment grade credit ratings. The LED lamps also act as collateral over the course of the contract.
Technological Risk	Malfunction or life of the LED lamp shorter than the period stated by the manufacturer	We factor this risk in our model and select only CE certified LED lamps producers

Sources:

- <sup>1</sup> Catalyst LEDs, Dec 2012
- <sup>2</sup> Relume, Comparing light technologies: What you need to know
- <sup>3</sup> Assuming 12/7 operation with 400W HPS lamp replaced by 150W LED lamps (Source: Dialight)
- <sup>4</sup> According to the CoolClimate Network
- <sup>5</sup> EDGAR: Trends inCO2 emissions per region/country 1990-2012



## The Opportunity: Green and profitable

The Illumina LED Fund enables municipalities to upgrade their lighting infrastructure and reduce both their electricity expenses and carbon dioxide emissions without increasing their debt burden. Our fund also enables investors to get exposure to the municipal sector through an innovative and attractive investment product. Equity investors will benefit from the fund's target IRR of 40% and income-oriented bond investors will benefit from earning a yield of 150 basis points over the municipalities' 10-year bond yield. Institutional investors can achieve these returns whilst fulfilling their corporate social responsibility requirements and helping communities reduce their carbon footprint.

## Due Diligence: Investing smartly

Our target market is American municipalities with an investment grade rating, and with a minimum population of 100,000 people. This would allow us to scale this project to at least 200 cities with an initial installation target of 3,000,000 lamps. Selecting investment grade municipalities will minimize default risk for the fund. Illumina LED Venture Fund established partnerships with institutions having years of experience in the fund management and consulting industries. Through these partners, the fund has access to a strategic network of municipalities in the United States whom have expressed an interest in LED technology. Additionally, the Illumina Venture Fund managers have experience in fund management, EMC and energy consulting.

## Impact: A greener America, a greener world

### Environmental

- ❖ Reduction of carbon dioxide emissions: Replacing 3 mil HPS lamps with LED lightings will decrease carbon dioxide emissions by 3.75 mil tons each year. This is equivalent to the yearly carbon dioxide emissions of over 90,000 households (1 lamp = 1.25 tons of carbon dioxide reduction annually).
- ❖ Helping the country with the second highest carbon dioxide emissions in the world to reduce its carbon footprint will have a substantial positive impact on the entire planet.

### Economic

- ❖ Electricity cost savings can be reinvested into new projects by the municipality
- ❖ No additional economic burden to the tax payer

### Social

- ❖ Healthier living environment for all
- ❖ Municipalities set an example that will encourage individuals to make the switch to LED lightings

## Diagram of Illumina LED Fund