

# BUSINESS

TODAY'S FOCUS **GROWTH**

**AIRLINES:** A judge refuses to block the merger of American and US Airways. **Business 3**

## SKY'S THE LIMIT FOR VERTICAL FARMING



PHOTOS: EUGENE GARCIA, ORANGE COUNTY REGISTER

Steve Fambro, founder & CEO of Famgro Farms, holds a bunch of sweet kale grown indoors under ultracool LED light arrays at his facility in Oceanside. Such produce will hit Orange County grocery stores in the first quarter of next year.

## Crops take less space, less water.

On Famgro Farms, there are no rows of crops in sun-drenched soil. Its leafy greens are grown in dirtless flats, stacked inside an Oceanside warehouse. They are nurtured under the magenta glow of LED lights without any pesticides, herbicides or animal products.



MARNI USHEROFF REGISTER WRITER

And the farmer? That would be Steve Fambro, an electrical engineer, whose previous project was an energy-efficient car.

Fambro's company – the name is a combination of his family name and “grow” – exited its test, or beta, phase and “went live” over the summer. He joins a coterie of local farmers who use variations of vertical horticulture and hydroponics or aquaponics to produce fresh produce while conserving increasing-

**“I’m about producing local, affordable, better-than-organic food to everybody using whatever combinations of technology we develop.”**

STEVE FAMBRO

ly precious land, water and energy.

Fambro, 46, says his greens will be coming to Orange County grocery stores in the first quarter of 2014, though he declined to specify where. They're available now in San Diego-area Whole Foods and other natural-food markets, and Famgro has sold its produce to some O.C. and San Diego restaurants and catering services.

A 4-ounce package of his sweet kale re-

SEE FAMGRO • PAGE 3



Sprouts grown under LED light sit in trays at Famgro. More efficient farming can help address a growing population.

## Job growth not enough for some

Analysts share their takes on the 5-year low.

*My tally of business patterns ponders the curiously mixed reviews given to Friday's employment stunner – that national unemployment had fallen to 7 percent, a five-year low. Here's a list of analysts who see the economic as glass half-full, and some who don't.*



JONATHAN LANSNER REGISTER COLUMNIST

**HALF-FULL:** Chris Muoio of Auction.com: “Coupled with accelerating GDP and other solid metrics, the evidence is mounting for a self-sustaining economic recovery.”

**HALF-FULL:** Doug Handler of IHS Global: “This report ratifies the argument that the economy is seeing very stable growth, and is poised for an acceleration in 2014 as some of the factors that hurt growth in 2013 dissipate.”

**HALF-FULL:** Russell Price of Ameriprise Financial: “This should come as particularly good news for the nation's retailers as we head into the holiday season. Consumers should feel a bit more confident in their financial prospects as well as have a bit more cash in their pockets.”

**HALF-EMPTY:** Chris Williamson of Markit: “This week's data add to the sense that the Fed will be itching to pull the trigger to at least to fire a warning shot that the time has come to start slowly bringing about some normalization” of its economic stimulus policies.

**HALF-EMPTY:** Michael Strain of the American Enterprise Institute: “We shouldn't confuse a good month with a good situation overall. The labor market remains weak, low-skill workers and the long-term unemployed are suffering.”

*And a real estate bent:*

**HALF-FULL:** Jed Kolko of Trulia: “Jobs report was solid for housing on all three fronts. Residential construction employment increased the most in four months, more young adults went back to work, and clobbered metros had strong job gains.”

**HALF-EMPTY:** Ken Simonson of Associated General Contractors of America: Construction employment hit highest level since August 2009 as construction spending hit a four-year high in October. “While these new employment figures are very encouraging, growth remains uneven by segment, region and time period.”

Jobless rate's plunge, Page 6

### MORE INSIDE

#### BITCOIN USED TO BUY AN ELECTRIC CAR

In a high-tech deal, a Florida man pays Tesla for a Model S with digital currency. **Page 2**



#### MARKETS DRIVEN BY JOBS DATA

Stock prices rose as investors weighed better-than-forecast jobs growth to gauge the strength of the economy and timing of the Fed's stimulus cuts, ready for reevaluation. **Page 7**

## Health site wrestles with backlog

25,000 applications have yet to be processed with Dec. 23 deadline looming.

By **BERNARD J. WOLFSON** ORANGE COUNTY REGISTER

Covered California is stumbling over a backlog of 25,000 paper applications it has been unable to process, as a Dec. 23 enrollment deadline looms for people who want medical coverage that starts Jan. 1.

Hoping to solve the problem before the deadline, the state-run exchange has asked insurance agents who originally submitted the applications on behalf of their clients to go back and enter the information by hand into its online enrollment system. Many agents are irritated by the request, because the exchange originally told

them its own staff would perform that task.

Agents also worry that, with time running short, many people who thought they would have coverage on Jan. 1 may not. Some of the applications date to early October, when the

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#### MARKET RECAP



**Dow Industrials**  
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Change: +198.69



**Nasdaq Index**  
Close: 4,062.52  
Change: +29.36



**S&P 500 Index**  
Close: 1,805.09  
Change: +20.06



**10-year Treasury:**  
Close: 2.86%  
Change: -0.01



**Oil per barrel:**  
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**O.C. gas prices:**  
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**MORE ON PAGE 7**

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PHOTOS: EUGENE GARCIA, ORANGE COUNTY REGISTER

Famgro Farms' "macro-farm" units occupy about the area of a Prius, but stand about 12 feet high. The energy-efficient LEDs are cooler than normal artificial lights, which keeps the units compact.

# FAMGRO: Computer tracks seedlings

FROM PAGE 1

tails for about \$3.99 – “on market for organic premium produce,” Fambro says. He adds that Famgro’s ongoing research and development is focused on lowering the cost – using or developing whatever tools are needed – in order to make their food affordable.

LED-enabled agriculture is just coming out of its infancy, says Heiner Lieth, a professor in the Department of Plant Sciences at UC Davis.

“Quite a few companies are starting up and making business out of essentially this area of food production,” Lieth explains. He adds that although farming this way may have been possible in the past, it was also cost-prohibitive. But advances in lighting technology – more efficient LEDs with higher outputs at lower costs have changed that part of the equation over the past two years.

The search for more efficient farming will only become more critical in coming years. The world’s population is expected to balloon from 7 to about 9 billion people by 2050. Meanwhile, growth in agriculture production has been slowing, according to a report by the Food and Agriculture Organization of the United Nations.

Agriculture already uses 11 percent of the world’s land surface for crop production and 70 percent of all water drawn from aquifers, streams and lakes. Water is getting scarcer as its cost rises, especially in Southern California. The U.N. report predicts that increases in agricultural output will likely come from ramping up production on existing farmland along with adoption of sustainable land-management practices and more efficient use of irrigation water.

Fambro has attacked these issues with the analytical eye of an engineer. He honed his ability to dissect systems and optimize for efficiency while making a powerful DNA synthesizer at San Diego biotech firm Il-



LED-enabled agriculture is just coming out of its infancy, says Heiner Lieth, a professor in the Department of Plant Sciences at UC Davis.

## GROWING VERTICALLY IN O.C.

By MARNI USHEROFF  
ORANGE COUNTY REGISTER

Erik Cutter, managing director of Alegria Farm, maintains 120 towers of stacked hydroponic planters on about a half acre of land (soon to be a full acre) in the Great Park. He grows fruit, leafy greens, vegetables and medicinal herbs, working with grower/shipper Orange County Produce LLC.

Alegria Farm’s vertical units are made of six to eight stacked interlocking pots, each holding about three to six plants rooted in coconut fiber. The towers are anchored at the bottom by a five-gallon pot planted with beets or kale. Drip lines run along the tops of the towers, using timers to disperse only enough water to trickle down through the containers and sufficiently feed the plants at the bottom.

“We’re doing 52 plants in two square feet,” says Cutter, 56. He hopes to teach the public how to grow for themselves in tight spaces.

Up in Brea, Chef Adam Navidi also grows basil, cilantro, spinach and other herbs and greens vertically inside a small portion of his giant Future Foods Farms greenhouses. He cultivates organic produce without pesticides using aquaponic growing systems, which rely on fish waste being converted into nutrients that infuse the water and nourish the plants.

The vertical units are 6- to 12-foot-tall food-grade pipes with about 10 plants sprouting from small holes. Water rises through the pipes via a siphoning system.

Navidi, 40, says when he discovered aquaponics, a light went off.

“This was the most natural, symbiotic relationship with growing food,” he says.

lumina Inc. and building an electric vehicle at Aptera Motors Inc., the Carlsbad company Fambro started in his garage.

“We control the temperature, we control the airflow, we control the light,” Fambro says of his self-contained “macro-farm” units,

where he closely tracks his crops from seedlings to full-grown greens via a computer system. “The computer tells me when it’s going to be harvested because we understand all of those variables so well now.”

Each rectangular farm unit takes up roughly the

same square footage of a Prius, but rises about a dozen feet high. They’re stacked with horizontal beds of hydroponically grown sweet kale, pac choi, microgreens, arugula, basil and other leafy greens planted in natural fibers (Fambro won’t disclose the specific material). The roots are fed with nutrient-rich water.

Arrays of custom-built red and blue light-emitting diode (LED) lights shine down on each bed, fixed beneath the row above. The lighting system singles out the two hues the leafy greens need most. The energy efficient LEDs are also cooler than normal artificial lights. That keeps the units compact and lets them sit close to the plants.

Fambro says the system uses about 3 percent of the water; 1 percent of the land and a fraction of the labor of traditional farming. He also says that the energy needed to grow 20 servings of some of Famgro’s greens is equivalent to what’s needed to heat a 10-minute shower.

Fambro wants to branch out to other produce. He envisions his farms near population centers, so they can provide people with locally grown affordable fresh produce.

“I’m about producing local, affordable, better-than-organic food to everybody using whatever combinations of technology we develop to achieve that mission,” he says.

He also sees the value in such self-contained farms being placed near fulfillment hubs for delivery services increasingly being offered by companies such as Amazon and Google.

“All of them have one easy thing – frozen and dry goods that can be warehoused somewhere else,” Fambro says. “But they all will face an expansion problem unless they have some means of getting fresh greens locally.”

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# JUDGE WON'T BLOCK AMERICAN MERGER WITH US AIRWAYS

By LARRY NEUMEISTER  
THE ASSOCIATED PRESS

NEW YORK • A judge refused to block a merger between American Airlines and US Airways on Friday, saying a federal bankruptcy judge correctly rejected arguments made by a lawyer for some consumers.

San Francisco attorney Joseph Alioto argued that the deal would harm fliers because it would result in less competition and higher prices. But U.S. District Judge Loretta Preska noted that his arguments relied on outdated facts, had no evidence to support them and sometimes made no sense.

“There is nothing in the record from which I can make a finding that your clients are likely to be irreparably injured – personally,” she said.

American is owned by AMR Corp. and is based in Fort Worth, Texas. The company has said it plans to complete the merger with Tempe, Ariz.-based US Airways on Monday.

Preska said a bankrupt-

cy judge was “correct in all respects” in deciding last week to let the merger proceed. She also refused to stay the effect of her ruling while Alioto appeals to the 2nd U.S. Circuit Court of Appeals.

Preska said Alioto had failed to show consumers would suffer irreparable harm or that he was likely to succeed in his effort to temporarily block the merger until a trial could be conducted on his antitrust lawsuit. U.S. Bankruptcy Judge Sean Lane said last week that even if Alioto won his lawsuit, he could demand additional divestitures by the two airlines but could not wreck the merger.

In August, the Justice Department had sued to block the merger, saying it would hurt competition and produce higher prices. But regulators settled their case in exchange for the airlines’ promise to surrender some coveted landing rights at Reagan National near Washington and LaGuardia in New York and a few gates at five other airports.



FILE PHOTO: AP

When merged, US Airways and American Airlines will give up some landing rights at D.C.’s Reagan National.

# INSURANCE: Agents ‘frustrated’

FROM PAGE 1

exchange opened for business.

“Agents are frustrated because they helped individuals and families complete their applications and sent them in as they were instructed to do, and are finding that those applications have sat for weeks without being processed,” said Neil Crosby, spokesman for the California Association of Health Underwriters. “And now the state is coming back and asking them basically to do it all over again and enter them into the system themselves.”

Crosby said he was not confident that all of the applications could be completed by Dec. 23 because they are long – up to 34 pages – and they do not match the online format. That complicates the task.

Covered California, however, insisted there was no alternative to getting the job done.

“We are not going to let any of those people fall through the cracks. We need them,” said Anne Gonzalez, a spokeswoman for the exchange. She said Covered California has reassigned staff members to help enter the applications, and is aiming to finish the task by the end of

next week.

The good news is that the incomplete applications mean enrollment in exchange-based health plans may actually be closer to 100,000 than the 80,000 figure Covered California reported for mid-November.

While it grapples with the application backlog, Covered California is also facing a sudden spike in demand this week, Gonzalez said. Callers faced long wait times or were greeted with a message directing them to the exchange’s website because of high call volume.

On Wednesday, Gonzalez said, there were 17,000 calls in one 50-minute period – nearly double the full-day average of last week.

But high call volume may not fully explain the difficulty getting through. Last week, the volume was only two-thirds what it had been the previous week, yet the average wait time rose to 25 minutes from 18. Gonzalez attributed it to the fact that more callers are actually enrolling now, which requires a lot more time on the phone.

### COMING SUNDAY

With deadlines looming to buy health insurance, the Register follows the tough decisions facing nine Orange County residents.

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PHOTOS: EUGENE GARCIA, ORANGE COUNTY REGISTER

Sweet kale grown at Famgro are packaged and ready for shipment. “We control the temperature, we control the airflow, we control the light,” Steve Fambro says.

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